

**BHUTAN POWER CORPORATION LIMITED  
PROCUREMENT SERVICES DEPARTMENT  
THIMPHU: BHUTAN**



(Tender No. **BPC/PSD-TU/EM/2010/08** dated 30<sup>th</sup> April 2010)

**BID DOCUMENT  
FOR  
THE SUPPLY AND DELIVERY  
OF  
ENERGY METERS & MISCELLANEOUS LINE  
MATERIALS**

April 2010



འབྲུག་གློག་མེ་ལས་འཛིན།  
**Bhutan Power Corporation Limited**  
Procurement Services Department  
Thimphu : Bhutan

BPC/PSD-TU/EM/2010/504

30<sup>th</sup> April 2010

Fax No.: +975-02-322975


To,  
Manager,  
Advertising Department,  
Kuensel Corporation Limited,  
Thimphu: Bhutan

**Subject:** Publishing Notice Inviting Quotation (NIQ)

Please publish the following NIQ in Kuensel issue on 3<sup>rd</sup> May 2010. Please note that only the texts that are boxed in should appear in the announcement.

1. Tender No. and Date	
BPC/PSD-TU/EM/2010/08 dated 30 <sup>th</sup> April 2010	
2. Bid Details	
a) Cost of document	Nu. 3,000.00 (Non-refundable).
b) Date of Sale	3 <sup>rd</sup> May 2010 to 3 <sup>rd</sup> June 2010.
c) Place of sale	Procurement Services Department (PSD), BPC, Thimphu.
d) Date of submission	8 <sup>th</sup> June 2010 (1500 hrs).
e) Place of submission:	PSD, BPC, Thimphu.
f) Opening Date:	8 <sup>th</sup> June 2010 (1530 hrs)
g) Place of Opening:	BPC Conference Hall, Thimphu.
h) Approximate value	Nu. 39.00 million
i) Major Items	Static Energy Meters (14000 Nos) and other line and substation materials
The details of the items that will be procured are available in the bid document which can be obtained from the office of the Procurement Services Department, BPC or can also be downloaded from the BPC website <a href="http://www.bpc.bt">www.bpc.bt</a> but for reference only. However, the Bidder / Supplier who all have downloaded the Bidding document and intended to participate are required to deposit the cost of the Bidding document along with written application and a License copy at BPC's office prior to Bid sale closing date.	

Yours sincerely,

  
(Pradeep M Pradhan)  
General Manager



འབྲུག་གློག་མེ་ལས་འཛིན།  
**Bhutan Power Corporation Limited**  
**Procurement Services Department**  
**Thimphu : Bhutan**



**Tender No. :** BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010  
**Work Name :** Supply and Delivery of Energy Meters & Miscellaneous Line Materials

**SALIENT FEATURES OF THE BID**

<b>1. Tender No. and Date</b>			
BPC/PSD-TU/EM/2010/08 dated 30 <sup>th</sup> April 2010			
<b>2. Description of Lots and Lot No.</b>			
Lot 1A	Static Energy Meters	Lot 4A	XLPE Cables
Lot 1B	Electro Mechanical Energy Meters	Lot 4B	PVC Cables
Lot 1C	High Tension Electronic Meters	Lot 4C	XLPE/PVC Jointing Kits
Lot 1D	CT Rings	Lot 5	Ring Main Unit
Lot 1E	Current/Potential Transformers	Lot 6	MCCB and HRC Fuse Base
Lot 2A	Poles Fittings	Lot 7	Electrical Line Materials
Lot 2B	Distribution Boxes & Mini Pillars	Lot 8	Insulators
Lot 3	ABC Accessories	Lot 9	ARCB
<b>3. Bid Details</b>			
a) Cost of document	Nu. 3,000.00 (Non-refundable)		
b) Date of Sale	3 <sup>rd</sup> May 2010 to 3 <sup>rd</sup> June 2010		
c) Place of sale	Procurement Services Department (PSD), BPC, Thimphu		
d) Date of submission	8 <sup>th</sup> June 2010 (1500 hrs)		
e) Place of submission:	PSD, BPC, Thimphu		
f) Opening Date:	8 <sup>th</sup> June 2010 (1530 hrs)		
g) Place of Opening:	BPC Conference Hall, Thimphu		
h) Approximate value	Nu. 39.00 million		
<b>4. Bid Security (Earnest Money Deposit)</b>			
As per 16.1 & 16.2 of Section IA and Section IB, Annex-1, drawn in favour of General Manager, Procurement Services Department, Bhutan Power Corporation Ltd., Thimphu.			
<b>5. Bid Validity</b>			
<i>Bids shall remain valid for 90(NINETY) days from the date of bid opening.</i>			
<b>6. Quantity Variation</b>			
As per 34.1 of Section IA, the quantity variation will be (+/-) 20% of the quantity of Goods.			



**འབྲུག་གློག་མེ་ལས་འཛིན།**  
**Bhutan Power Corporation Limited**  
**Procurement Services Department**  
**Thimphu : Bhutan**



**Tender No. :** BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010  
**Work Name :** Supply and Delivery of Energy Meters & Miscellaneous Line Materials

**CHECKLIST FOR BID SUBMISSION**

<b>Sl. No.</b>	<b>Particulars</b>	<b>Purchasers Requirement</b>
1	Bid Form and Price Schedules	Yes
2	Power of Attorney	Yes
3	Documents Establishing Eligibility of the Bidder - Clause 13	Yes
4	Documents Establishing of the Bidders qualification to Perform the Contract – Clause 14	Yes
5	Documents Establishing the Goods' conformity to the Bidding Documents – Clause 15	Yes
6	Bid Security – Clause 16	Yes



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SECTION IA INSTRUCTION TO BIDDERS	
<b>A. GENERAL</b>	
<b>1. SCOPE OF BID</b>	
1.1	The Procurement Services Department, Bhutan Power Corporation Limited (BPC), Thimphu (hereinafter referred to as “ <b>the Purchaser</b> ”) wishes to receive bids for supply and delivery of the <b>Energy Meters and Miscellaneous Line Materials</b> described in Section IV hereof (hereinafter referred to as “ <b>the Goods</b> ”).
1.2	All bids are to be completed and returned to the Purchaser in accordance with these instructions to the bidders.
1.3	<i>All terms and conditions that require special attention and are specific to this bid are highlighted (shaded), written in bold and/or italics. The bidder shall, under no circumstances waive responsibility of not having comprehended their implication in this bid document.</i>
<b>2. ELIGIBLE BIDDERS</b>	
2.1	The Invitation for bids is open to all Manufacturers/Export House/Authorized Dealers from outside Bhutan and to Authorized Dealers/National Suppliers licensed under the Ministry of Economic Affairs of Royal Government of Bhutan (Supporting evidence to corroborate the claim must be enclosed).
2.2	<i>A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. Bidders are considered to have a conflict of interest in this bidding process if they:</i>
a	are associated, or have been associated in the past, with a firm or any of its affiliates which has been engaged by the Purchaser to provide consulting services for the preparation of the design, specifications and /or other documents to be used for the procurement of the goods to be purchased pursuant to these Bidding Documents, or
b	employ or otherwise engage, either directly or through any of their affiliates, a spouse, dependent or close relative of a Corporation who either is employed by the Purchaser or has an authority over it. For the purposes of this sub-clause a close relative is defined as immediate family which includes father, mother, brother, sister, spouse and own children.
<b>3. COST OF BIDDING</b>	
3.1	The Bidder shall bear all costs associated with the preparation and delivery of its Bid and the Purchaser will in no case be responsible or liable for those costs.

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<b>4. JOINT VENTURES</b>	
4.1	Bids submitted by a Joint Venture of two or more Companies as Partners shall comply with the following requirements:
a.	the Bid, and in case of successful Bid, the Contract form, shall be signed so as to be legally binding on all partners;
b.	one of the Partners shall be authorized to be in charge; and this authority shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the Partners;
c.	the Partner in charge shall be authorized to incur liabilities, receive payments and receive instructions for and on behalf of any or all Partners of the Joint Venture;
d.	all Partners of the JV shall be liable jointly and severally for the execution of the Contract in accordance with the Contract terms, and a relevant statement to this effect shall be included in the authorization mentioned under (b) above as well as in the Bid Form and the Form of Agreement (in case of a successful Bid); and
e.	a copy of the agreement entered into by the JV Partners shall be submitted with the Bid.
<b>B. THE BIDDING DOCUMENTS</b>	
<b>5. BIDDING DOCUMENTS</b>	
5.1	The goods required, bidding procedures and Contract terms are prescribed in the bidding documents. In addition to the invitation for Bids, the Bidding Documents include:
i	Instruction to Bidders;
ii	General Conditions of Contracts;
iii	Special Conditions of Contracts;
iv	Bid Form;
v	Price Schedules and Specifications;
vi	Sample Forms
	a. Bid Security Form
	b. Contract Form
	c. Performance Security Form
	d. Power of Attorney Form
	e. Manufacturer's Authorization
5.2	The Bidder is expected to examine the bidding documents, including all instructions, forms, terms and specifications. Failure to furnish all information required by the bidding documents or submission of a bid not substantially responsive to the Bidding Documents in every respect would result in the rejection of the Bid.

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<b>6. CLARIFICATIONS OF BIDDING DOCUMENTS</b>	
6.1	Prospective Bidders requiring any further information or clarification of the bidding documents may notify the Purchaser in writing or by fax at the Purchaser's mailing address indicated in the Invitation for Bids. The Purchaser will respond in writing to any request for information or clarification of the bidding documents, which it receives no later than 10 (ten) days prior to the deadline for the submission of Bids prescribed by the Purchaser. The Purchaser's response (including an explanation of the query) will be sent in writing or by fax to all prospective Bidders who have purchased the Bidding Documents.
<b>7. AMENDMENTS OF BIDDING DOCUMENTS</b>	
7.1	At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by Addendum.
7.2	The amendment shall be part of the Bidding Documents, pursuant to Sub-Clause 5.1 and it will be notified in writing or by fax to all prospective Bidders who have received the Bidding Documents, and will be binding on them.
7.3	In order to afford prospective Bidders reasonable time in which to take the amendment into account in preparing their Bids, the Purchaser may, at its discretion, extend the deadline for the submission of Bids.
<b>C. PREPARATION OF BIDS</b>	
<b>8. LANGUAGE OF BID</b>	
8.1	The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the Purchaser, shall be written in the <b>English/Dzongkha</b> language. Any printed literature furnished by the bidder may be written in any other language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the <b>English</b> translation shall govern.
<b>9. DOCUMENTS COMPRISING THE BID</b>	
9.1	The Bid prepared by the Bidder shall comprise the following components:
a	Bid Form and Price Schedules completed in accordance with Clause 10,11 and 12;
b	Documentary evidence establishing, in accordance with Clause 13, that the Bidder is eligible to bid.
c	Documentary evidence establishing, in accordance with Clause 14, that the Bidder is qualified to perform the Contract if its Bid is accepted;

SECTION IA  
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	d	Documentary evidence establishing, in accordance with Clause 15, that the goods to be supplied by the Bidder conform to the Bidding Documents; and
	e	Bid security furnished in accordance with Clause 16.
<b>10. BID FORM</b>		
10.1		The bidder shall complete an original and one copy of the Bid Form and the appropriate Price Schedules furnished in the Bidding Documents.
<b>11. BID PRICES</b>		
11.1		The Bidder shall complete the appropriate Price Schedules included herein, stating the unit prices, total price per item, the total amount and the expected countries of origin of the Goods to be supplied under the Contract. Price should be CIP/CIF (place indicated in the SCC or Price Schedule).
11.2		<p><i>All goods are grouped in lots for easy identification. See list of lots in Section V, Bid Form and Price Schedule.</i></p> <p><i>Bidders shall have the option of submitting a proposal on any or all LOTS. Each lot consists of items grouped in packages. Bid packages shall not be divided into sub-packages for the purpose of bidding. If the Bidder has not quoted for some items within a lot, and the items do not represent a major/integral part of the lot, then the average rates from other responsive bids shall be cost loaded for the purpose of the evaluation of that lot. The bids shall, therefore, be evaluated on LOT basis or in a manner that is most advantageous to the Purchaser for that particular item.</i></p>
11.3		<i>Prices quoted by the Bidder shall remain fixed and valid for 90 (NINETY) days from the date of bid opening and will not be subject to variation on any account except as provided for in Sub-Clause 3.2 of the General Conditions of Contract. A bid submitted with price adjustment condition will be treated as non-responsive and will be rejected.</i>
<b>12. BID CURRENCIES</b>		
12.1		Prices shall be quoted in Ngultrum for goods offered from Bhutan, in Indian Rupee for goods offered from India; and in US dollar for goods offered from other countries. Payment to all suppliers shall be made in Indian Rupee or in Ngultrum. No payment in US dollar is allowed unless specified in SCC (clause 9). For bidders quoting in US dollar but accepting payment in INR or Nu. All exchange risk shall be borne by the Supplier.
<b>13. DOCUMENTS ESTABLISHING ELIGIBILITY OF THE BIDDER</b>		
13.1		The Bidder shall furnish, as part of its Bid, certification establishing the Bidder's eligibility to bid pursuant to Clause 2.
13.2		<i>The necessary documents and literatures viz. ISO Certificates, Type Test Certificates</i>



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		<i>and Lists of Past Performance Certificates for the critical items (lots) from the users must be submitted.</i>
<b>14.</b>	<b>DOCUMENTS ESTABLISHING OF THE BIDDER'S QUALIFICATION TO PERFORM THE CONTRACT</b>	
14.1	The documentary evidence of the Bidder's Qualification to Perform the Contract, if its bid is accepted, shall establish to the Purchaser's satisfaction prior to award of Contract:	
	a	That, in the case of a bidder offering to supply Goods under the Contract which the Bidder did not manufacture or otherwise produce, the bidder has been duly authorized by the Goods' manufacturer or producer to supply the goods to or in Bhutan;
	b	That, in the case of a Bidder not doing business in Bhutan, the Bidder is, or will be (if the contract is awarded to it), represented by authorised representative in Bhutan.
	c	<i>That the Bidder has carried out similar contracts in the past in Bhutan.</i>
	d	<i>That the Bidder has the financial, technical and production capability necessary to perform the Contract in addition to satisfying any or all of the conditions mentioned in a) through c).</i>
<b>15.</b>	<b>DOCUMENTS ESTABLISHING THE GOODS' CONFORMITY TO THE BIDDING DOCUMENTS</b>	
15.1	The documentary evidence of the Goods' conformity to the Bidding Documents may be in the form of literature, drawings and data, and shall furnish:	
	a	A detailed description of the Goods' essential Technical and Performance Characteristics. The Bidders are required to confirm and sign on the Guaranteed Technical Particulars of the goods (GTP's) that is indicated in the Price Schedule or Technical Specifications. Any deviations from the indicated specifications must be clearly indicated.
	b	For purposes of the commentary to be furnished pursuant to Sub-Clause (a) above, the Bidder shall note that standards for workmanship, material and equipment, and references to make names or catalogue numbers, designated by the Purchaser in the Specifications, are intended to be descriptive only and not restrictive. The bidder may substitute other authoritative standard make names and/or catalogue numbers in its Bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions are equivalent or superior to those designated in the Specifications unless stated otherwise in the SCC and Price Schedule
15.2	<i>In order to prove that the Goods offered are of acceptable quality and standard, the Bidders shall furnish the documentary evidence that the Goods offered have been in</i>	

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	<i>production and submit all relevant catalogues, test certificates, ISO certificates, list of previous clients, value of business and company or manufacturer profile for all new brands that are introduced in Bhutan.</i>
<b>16. BID SECURITY</b>	
16.1	Pursuant to Clause 9, the Bidder shall furnish, as part of its Bid, a bid security in the amount as specified in Section 1B, Annex-1.
16.2	The Bid security shall be valid for 30 (thirty) days beyond the validity of the Bid (i.e. up to <b>6<sup>th</sup> October, 2010</b> ) and shall be in one of the following forms acceptable to the Purchasers:
a	Bank Guarantee/Demand Draft/Cash Warrant issued by a reputable Bank acceptable to the purchaser in the form provided in the bidding documents or another form acceptable to the Purchaser.
b	<b><i>However, all the bidders/suppliers are notified that any Bank Guarantee for bid security and performance security from outside Bhutan should be counter guaranteed by any Bank in Bhutan.</i></b>
16.3	Any Bid not secured in accordance with Sub-Clause 16.1 and 16.2 above shall be rejected by the Purchaser as non-responsive, pursuant to Clause 28
16.4	An unsuccessful Bidder's bid security will be discharged/returned as promptly as possible upon award of Contract, but in any event not later than thirty (30) days after the expiration of the period of bid validity prescribed by the Purchaser, pursuant to Clause 17.
16.5	The successful Bidder's bid security will be discharged/returned upon furnishing the performance security, pursuant to Clause 35 and the Bidder's executing the Contract, pursuant to Clause 36.
16.6	The Bid Security may be forfeited:
a	If a Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form; or
b	In the case of a successful Bidder, if the Bidder fails
i.	To sign the Contract in accordance with Clause 35; or
ii.	To furnish the performance security in accordance with Clause 36.
16.7	Bidders have the option of also depositing a permanent security of Nu. 500,000.00 with the corporation. An EMD beyond this amount shall be deposited with an additional guarantee. This amount shall be valid for all tenders for supply of goods with BPC and shall also be applicable towards the performance security in the event of contract award to the Bidder.

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<b>17. PERIOD OF VALIDITY OF BIDS</b>	
17.1	<i>Bids shall remain valid for 90 (NINETY) days from the date of bid opening prescribed by the Purchaser, pursuant to Clause 25.</i>
17.2	Notwithstanding Sub-Clause 17.1 above, the Purchaser may solicit Bidder's consent to an extension of the period of bid validity. The request and the responses thereto shall be made in writing or by fax. If the Bidder agrees to the extension request, the validity of the bid security provided under Clause 16 shall also be suitably extended. A Bidder may refuse the request without forfeiting its bid security. Bidders granting the request will not be required or permitted to modify its Bid.
<b>18. ALTERNATIVE BIDS</b>	
18.1	Bidders shall submit Bids which comply with the Bidding Documents. <i>Alternative bids will not be considered.</i> The attention of the bidders is drawn to the provisions of Clause 28 regarding the rejection of Bids which are not substantially responsive to the requirements of the Bidding Documents.
<b>19. FORMATS AND SIGNING OF BID</b>	
19.1	The original Bid Form and accompanying documents (as specified in Clause 9), clearly marked "Original Bid", plus (one) copy must be received by the Purchaser at the date, time and place specified pursuant to Clauses 20 and 21. In the event of any discrepancy between the original and the copies, the original shall govern.
19.2	The original and copy of the bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person(s) duly authorized to sign on behalf of the Bidder. Written power-of-attorney accompanying the Bid shall indicate such authorization. The person or persons signing the Bid shall initial all pages of the Bid, except for un-amended printed literature. The name and position held by each person signing must be typed or printed below the signature.
19.3	The Bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such correction shall be initialled by the person or persons signing the Bid.
<b>D. SUBMISSION OF BIDS</b>	
<b>20. SEALING AND MARKING OF BIDS</b>	
20.1	The Bidder shall seal the original and copy of the Bid in an inner and an outer envelope, duly marking the envelopes as "Original" and "Copy".
20.2	The inner and outer envelopes shall:
a	Be addressed to the Purchaser at the following address <b>The General Manager</b> <b>Procurement Services Department</b>

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		<b>Bhutan Power Corporation Limited Thimphu: Bhutan</b>
	b	<i>Bear the words (“Tender No.BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010 for Supply and Delivery of Energy Meters &amp; Miscellaneous Line Materials”), the Tender Number and the words “DO NOT OPEN BEFORE 15.30 hours on 8<sup>th</sup> June 2010.</i>
		In addition to the information required in Sub-Clauses (a) and (b) above, the inner envelope shall indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared “Late” pursuant to Clause 23.
20.3		If the outer envelope is not sealed and marked as required by Sub-Clause 20.2, the Purchaser will not be responsible for the bid misplacement or premature open.
<b>21. DEADLINE FOR SUBMISSION OF BIDS</b>		
21.1		<i>The original Bid, together with the copy must be received by the Purchaser at the address specified in Sub-Clause 20.2 not later than 15.00 hours on 8<sup>th</sup> June 2010.</i>
21.2		The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents in accordance with Clause 7, in which case all right and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.
<b>22. ONE BID PER BIDDER</b>		
22.1		Each Bidder shall submit only one Bid either by itself, or as a partner in a Joint Venture or as a responsible officer in the management of the company. A Bidder who submits or participates in more than one Bid (except alternative Bids if allowed, pursuant to Clause 18) will be disqualified.
<b>23. LATE BIDS</b>		
23.1		Any Bid received by the Purchaser after the deadline for submission of Bids prescribed by the Purchaser, pursuant to Clause 21, will be declared “Late” and rejected and returned unopened to the Bidder.
<b>24. MODIFICATIONS AND WITHDRAWAL OF BIDS</b>		
24.1		The Bidder may modify or withdraw its Bid after the Bid’s submission, provided that written notice of the modification or withdrawal is received by the Purchaser prior to the deadline prescribed for submission of Bids.
24.2		The Bidder’s modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with provisions of Clause 20. A withdrawal notice may also be sent by fax but must be followed by a signed confirmation copy.
24.3		No Bid may be modified subsequent to the deadline for submission of Bids.

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24.4	No Bid may be withdrawn in the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified by the Bidder on the Bid Form.
<b>E.</b>	<b>BID OPENING AND EVALUATION</b>
<b>25.</b>	<b>OPENING OF BIDS BY PURCHASER</b>
25.1	<p>The Purchaser will open Bids, in the presence of Bidders' representatives who choose to attend at 15.30 hours on same day (3<sup>rd</sup> June 2010) and at the following location.</p> <p style="text-align: center;"><b>Conference Hall</b> <b>Bhutan Power Corporation Limited</b> <b>Thimphu: Bhutan.</b></p> <p>The Bidders' representatives who are present shall sign a register/bidders attendance sheet evidencing their attendance.</p>
25.2	<i>The Bidders' names, prices of bids, all discounts offered, modifications and bid withdrawals, and the presence or absence of the requisite bid security, and such other details as the Purchaser, at its discretion, may consider appropriate will be announced and recorded at the opening. Any bid price and discount, which is not read out and recorded at bid opening, will not be taken into account in bid evaluation. For Lots where the items are too numerous to be listed/read out only the lot amount/prices shall be read out.</i>
<b>26.</b>	<b>PROCESS TO BE CONFIDENTIAL</b>
26.1	Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the Purchaser's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.
<b>27.</b>	<b>CLARIFICATION OF BIDS</b>
27.1	To assist in the examination, evaluation and comparison of Bids, the Purchaser may, at its discretion, ask the Bidder for a clarification of its Bid. All responses to requests for clarification shall be in writing, and no change in the price or substances of the Bid shall be sought, offered or permitted.
<b>28.</b>	<b>PRELIMINARY EXAMINATION OF BIDS</b>
28.1	The Purchaser will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order.
28.2	Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the

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		unit price and quantity, the unit price shall prevail and the total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the Total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.
28.3		Prior to the detailed evaluation, pursuant to Clause 30, the Purchaser will determine substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered, pursuant to Sub-Clause 15.2. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation or reservation. A material deviation or reservation is one (i) which effects in any substantial way the scope, quality or performance of the Goods; (ii) which limits in any substantial way, inconsistent with the provisions of the bidding documents, the Purchaser's rights or the Bidder's obligations under the Contract; or (iii) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive bids.
28.4		A Bid determined as not substantially responsive will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
<b>29. CONVERSION TO NGULTRUM</b>		
29.1		To facilitate evaluation and comparison, the Purchaser will convert all bid prices, expressed in US Dollar or other convertible international currency, to Ngultrum at the Telegraph Transfer Selling exchange rate established by the Royal Monetary Authority of Bhutan for similar transactions on the date of opening of bids.
<b>30. EVALUATION AND COMPARISON OF BIDS</b>		
30.1		The Purchaser will evaluate and compare the Bids previously determined to be substantially responsive pursuant to clause 28.
30.2		The Purchaser's evaluation of a Bid will exclude and not take into account any allowance for price adjustment during the period of execution of the contract, if provided in the bid.
30.3	a	The comparison shall be of the ex-factory/ex-warehouse/off-the-shelf price of the Goods to be offered from within Bhutan and the CIF/CIP port-of-entry price of the Goods to be offered from outside Bhutan.
	b	For Goods offered from outside the Purchaser's Country, the cost of custom duties or any other taxes, and for Goods offered from within the Purchaser's Country, the cost of any sales and other taxes which will be payable on the Goods, will be added to the bid price.
	c	For Goods offered from outside the Purchaser's Country, the cost of local handling and transportation from the port of entry to the Purchaser's store and for Goods offered from within the Purchaser's country, similar cost from the warehouse/factory to the Purchaser's store will be added to the bid price.



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	d	<i>The Goods covered by this bidding document are required to be delivered in accordance with and completed within the Contract Execution Schedule specified in the Special Conditions of Contract; Bidders are required to base their prices on the specified Contract Execution Schedule. No credit will be given to earlier completion. Bids offering late delivery schedules (LDS) will be accepted but the Bids shall be adjusted for the purpose of the bid evaluation only adding at the rate of @one (1) per cent prorated of the bid price for each week of delay to the bid price. Bids offering delivery schedules beyond 2(two) months of the date specified in the Special Conditions of Contract shall be rejected.</i>
	e	<i>No conditional offer(s) shall be allowed. A bid with conditional offers shall be out rightly rejected.</i>
30.4	Sub Clause Not Applicable for this tender	
30.5	<i>In comparing Bids, a Margin of Preference will be granted to Goods of Bhutanese Origin in accordance with the following provisions. Goods shall be considered to be of Bhutanese Origin if the cost of the local materials, labour and services used to produce the item constitutes not less than 40% of the ex-factory bid price of that item.</i>	
	a	<i>For application of domestic preference, all responsive Bids will first be classified into the following two categories:</i> <p style="margin-left: 40px;"><i>I. Category I: Bids offering Goods manufactured or produced in Bhutan which meet the above requirement;</i></p> <p style="margin-left: 40px;"><i>II. Category II: Bids offering imported Goods.</i></p> <p><i>The Purchaser will review each Bid to confirm the appropriateness of, or to modify as necessary, the Category to which the Bid was assigned by the Bidder in preparing it.</i></p>
	b	<i>For the purpose of this further comparison only, an upward five percent (5%) price adjustment will be made to the CIF/CIP bid prices of Category II Bidders.</i>
30.6	<i>Bidders applying for the preference shall provide all evidence necessary to prove that the Goods offered by them were produced in Bhutan, and the cost of the local materials, labour and services used to produce the item constitutes not less than forty percent (40%) of the ex-factory bid price of that item.</i>	
30.7	<i>In case Goods are grouped in two or more lots, pursuant to Sub-Clause 11.2, the Purchaser will evaluate and compare Bids on the basis of LOT WISE or a combination of Lots in a manner most advantageous to the Purchaser.</i>	
30.8	<i>In case some items are not quoted for a particular lot, the Purchaser reserves the right to cost load the average responsive rate of other Bidders for the purpose of evaluation of that lot if it was determined that the non quoted items are not a major component of</i>	

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	the lot or do not form an integral element of the lot. Actual order shall however be done based on the lowest rate that has been quoted in that bid package. Should the Bidder fail, the EMD for that lot will be forfeited and tender for that lot awarded to the next lowest Bidder
<b>31.</b>	<b>CONTACTING THE PURCHASER</b>
31.1	Subject to Clause 27, no Bidder shall contact the Purchaser on any matter relating to its Bid, from the time of bid opening to the time the Contract is awarded.
31.2	Any effort by a Bidder to influence the Purchaser in the Purchaser's decisions in respect of bid evaluation, bid comparison or Contract awards will result in the rejection of the Bidder's Bid.
<b>32.</b>	<b>PURCHASER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS</b>
32.1	The Purchaser reserves the right to accept or reject any Bid and to annul the bidding process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the ground for the Purchaser's action.
<b>F.</b>	<b>AWARD OF CONTRACT</b>
<b>33.</b>	<b>POST QUALIFICATION AND AWARD</b>
33.1	The Purchaser will determine to its satisfaction whether the Bidder selected as having submitted the lowest-evaluated, responsive Bid is qualified to satisfactorily perform the Contract.
33.2	<i>The determination will take into account the Bidder's financial, technical and production capabilities. It will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to Clause 14, as well as such other information as the Purchaser deems necessary and appropriate.</i>
33.3	An affirmative determination will be a prerequisite for award of the Contract to the Bidder. A negative determination will result in rejection of the Bidder's Bid.
33.4	The Purchaser will award the Contract to the successful Bidder whose Bid has been determined to be the lowest-evaluated responsive Bid, provided further that the Bidder is determined to be qualified to satisfactorily perform the Contract.
<b>34.</b>	<b>PURCHASERS RIGHT TO VARY QUANTITIES</b>
34.1	<i>The Purchaser reserves the right to increase up to twenty (20%) or decrease by up to twenty per cent (20%) of the quantity of goods specified in the Price Schedules and Specifications, without any change in price or other terms and conditions.</i>

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<b>35. NOTIFICATION OF AWARD</b>	
35.1	The Purchaser will notify the successful Bidder in writing by registered letter, or by fax to be confirmed in writing by registered letter, that its Bid has been accepted and on which basis the Bid has been accepted.
35.2	The Notification of Award will constitute the formation of a Contract, until the Contract has been affected pursuant to Clause 36.
<b>36. SIGNING OF THE CONTRACT</b>	
36.1	At the time of Notification of Award (NoA), the Purchaser will send the successful Bidder the Contract Form provided in those Bidding Documents, incorporating all agreements between the parties or the successful Bidder would be called for signing of the contract through NoA.
36.2	Within fifteen (15) days of receipt of such Contract Form, the successful Bidder shall sign and date the Contract and return it to the Purchaser.
<b>37. PERFORMANCE SECURITY</b>	
37.1	Within 10 (Ten) days of the receipt of notification of award of contract, the successful Bidder shall furnish the performance security, in accordance with the Conditions of Contract.
37.2	The Performance Security @ 10% of the supply contract value shall be furnished by the successful Bidder in the form of Demand Draft/Cash Warrant/Bank Guarantee issued by the institution reflected in the clause 16.2(a)

**SECTION 1B**  
**SPECIAL INSTRUCTION TO BIDDERS**

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SECTION IB  
SPECIAL INSTRUCTION TO BIDDERS

SECTION IB SPECIAL INSTRUCTIONS TO BIDDERS	
<p>While the general provisions of this tender document spell out all the requirements for a responsive bid for this tender, the following special instruction clarifies the specific clauses applicable to specific lots. Therefore, when there is a contradiction on the provisions of the general instructions to the bidders (Section 1A) and the provisions of this Special Instruction to the Bidders, the provisions of this section shall overrule. This section is presented in an <b>Annex-1</b> with all the requirements indicated against the respective lots. Bidders are requested to ensure that they go through this checklist and submit all necessary documents to be responsive.</p>	
Some of the major features of this Special Instruction to Bidders are:	
<b>1. LICENSE CATEGORY</b>	
	This is to identify appropriate license category for various Dealers/Bidders in Bhutan. Apart from the manufacturers, for most of the Bidders the appropriate license shall be supply of electrical goods, hardware items and fabrication items.
<b>2. MANUFACTURER'S AUTHORIZATION</b>	
	Since local manufacturing capacity is non-existent or limited for most of the materials, manufacturer's authorization needs to be produced by the bidders for the major items. For some minor items that could be available in generic brand across the market, manufacturer's authorization is not required.
<b>3. BRAND NAMES</b>	
	BPC has adopted the policy of restricting certain Strategic Critical Items (SC-SKU's) as per the provision of the BPC Procurement Manual to ensure high quality, reduce inventory and to sustain long-term smooth operation and maintenance services. Bidders must ensure that for these lots, only the listed brand names are quoted and effort must be made to source this equipment directly from the manufacturers and or their authorized dealers. Preferred Brands/makes are specified in Price Schedule.
<b>4. EARNEST MONEY DEPOSIT (EMD)</b>	
	EMD has been fixed at various amounts for the lots that is approximately equal to 2% of the estimated cost of the lot. However, to ensure confidentiality of estimated costs, certain percentages are then added or deducted to arrive at the final EMD amount ( <b>Refer Annex-1</b> ). Preferably EMD should be submitted for the individual lots. Combined EMD would be also accepted, however, if the combined EMD is not sufficient in terms of total amount, the offer for the entire quoted lots would be treated as non-responsive as per Clause 16, Sub-clause 16.3 of Section IA – ITB and not considered for further evaluation.

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5. DELIVERY		
	Different Lots would require different delivery periods. Strategic critical items like that of HV equipment and bulk items those are to be sourced directly from the manufacturers would require at least 3-4 months whereas some of the tools and tackles and equipment that are readily available off the shelf could be supplied in shorter periods. Therefore, the delivery period ranges from 60 days for the smaller/non-critical materials to about 120 days for Transformers etc. Bidders are requested to specially note this condition to avoid late delivery and LD charges ( <b>Refer Annex-1</b> ).	
6. 10% PERFORMANCE SECURITY TO BE VALID OVER THE WARRANTY PERIOD		
	For most of the critical items and bulk items the 10% security shall be extended over the entire warranty period. But for other misc. and bulk items the 10% performance security shall be released after a period ranging from immediate upon delivery to 3 months after delivery but the manufacturing warranty period shall be valid as per standard practice ( <b>Refer Annex-1</b> ).	



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Annex - I

Lot No.	Description	Manufacturers Authorisation	Delivery Period (Days)	PS Validity	Bid Security (Nu.)	Manufacturers ISO Certification	Brand Names	Remarks
1A	Static Energy Meters	Yes	120	12 months	364,000.00	Yes	Restricted	R1
1B	Electro Mechanical Energy Meters	Yes	90	12 months	59,000.00	Yes	Restricted	R2
1C	HT Electronic Energy Meters	Yes	120	12 months	20,500.00	Yes	Restricted	R3
1D	CT Rings	Yes	90	12 months	3,500.00	Yes	Open	
1E	Current/Potential Transformers	Yes	90	12 months	8,000.00	Yes	Restricted	R4
2A	Poles Fittings	No	90	12 months	26,000.00	No	Open	
2B	Distribution Boxes & Mini Pillars	Yes	90	12 months	7,500.00	Yes	Open	
3	ABC Accessories	Yes	120	12 months	28,500.00	Yes	Restricted	R5
4A	XLPE Cables	Yes	90	12 months	132,000.00	Yes	Open	
4B	PVC Cables	Yes	90	12 months	3,500.00	Yes	Open	
4C	XLPE/PVC Jointing Kits	Yes	90	12 months	18,000.00	Yes	Open	
5	Ring Main Unit	Yes	120	12 months	45,500.00	Yes	Open	
6	MCCB & HRC Fuse Base	Yes	90	12 months	11,000.00	Yes	Open	
7	Electrical Line Materials	No	60	12 months	6,000.00	No	Open	
8	Porcelain insulators	Yes	90	12 months	21,000.00	Yes	Partially Restricted	R6
9	33 kV ARCB	Yes	120	12 months	40,000.00	Yes	Partially Restricted	R7

SECTION IB  
SPECIAL INSTRUCTION TO BIDDERS

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**Remarks**

- R1: Brands restricted to Actaris, Secure Meters, L&T, and EDM I
- R2: Brands restricted to Actaris, Hexing, Holley, Elster, Iskra, Alstom, ABB and Landis+Gyr
- R3: Brands restricted to Actaris & Iskrameco
- R4: Brands restricted to Actaris, Hexing, Holley, Elster, Iskra, Alstom, ABB, Landis+Gyr, New India Electricals & Perfect Sales
- R5: Brands Restricted to Sicamex/ Tyco/ Dulmison / Niled / Ensto
- R6: Preferred Brands – WSI, JSI, IEC and Jiangxi
- R7: Preferred Brands - Nulec

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**SECTION II  
GENERAL CONDITIONS OF CONTRACTS**

<b>SECTION II GENERAL CONDITIONS OF CONTRACTS</b>		
<b>1. DEFINITIONS</b>		
1.1	In this Contract, the following terms shall be interpreted as indicated:	
	a	"The Contract" means the agreement entered into between the Purchaser and the Supplier, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
	b	"The Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations.
	c	"The Goods" means all the equipment, machinery, and/or other materials, which the Supplier is required to supply to the Purchaser under the Contract.
	d	"The Services" means those services ancillary to the supply of the Goods, such as transportation and Insurance, provision of technical assistance, training, and other such obligations of the Supplier covered under the Contract.
	e	"The Purchaser" means the Bhutan Power Corporation Limited with its corporate office at Thimphu, Bhutan.
	f	"The Supplier" means the individual or firm supplying the Goods and Services under this Contract.
	g	"Day" means calendar day.
<b>2. USE OF CONTRACT DOCUMENTS AND INFORMATION</b>		
2.1	The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, drawings, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in the Performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only as far as may be necessary for purposes of such performance.	
2.2	The Bidder/Supplier shall not, without the Purchaser's prior written consent, make use of any document or information specified in Clause 2.1 above, except for purposes of performing the Contract.	
2.3	Any document, other than the Contract itself, specified in Clause 2.1 above, shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser, on	

## SECTION II GENERAL CONDITIONS OF CONTRACTS

	completion of the Supplier's performance under the Contract, if so required by the Purchaser.
<b>3. CHANGE ORDERS</b>	
3.1	The Purchaser may at any time, by a written notice to the Supplier, make changes within the general scope of the Contract in any one or more of the following:
a	Drawings, designs or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser; or
b	The method of shipment or packing; or
c	The place of delivery.
3.2	<i>Upon notification by the Purchaser of such change, the Supplier shall submit to the Purchaser an estimate of costs for the proposed change (hereinafter referred to as the Change) within ten (10) calendar days of receipt of notice of the change, and shall include an estimate of the impact (if any) of the change on the delivery dates under the Contract, as well as a detailed schedule for the execution of the change, if applicable.</i>
3.3	The Supplier shall not perform changes in accordance with Clause 3.1 above until the Purchaser has authorized a change order in writing on the basis of the estimate provided by the Supplier as described in Clause 3.2 above.
3.4	Changes mutually agreed upon as a Change shall constitute a part of the work under this Contract, and the provisions and conditions of the Contract shall apply to said change.
<b>4. CONTRACT AMENDMENTS</b>	
4.1	Subject to Clause 3, no variation in or modification of the conditions and terms of the contract shall be made except by written amendment signed by the parties.
<b>5. SUBCONTRACTS</b>	
5.1	The Supplier shall not subcontract all or any part of the Contract without first obtaining the Purchaser's approval in writing of the subcontracting and the subcontractor in case of works.
5.2	The supplier guarantees that any and all subcontractors of the Supplier to performance of any part of the work under the Contract will comply fully with the terms of the Contract applicable to such part of the work under the Contract.
<b>6. COUNTRY OF ORIGIN</b>	
6.1	All Goods supplied under the Contract shall have their origin in eligible countries if these

## SECTION II

### GENERAL CONDITIONS OF CONTRACTS

	eligible countries are specified in the Special Conditions of Contract. For purposes of this Clause, "origin" shall be considered to be the place where the Goods were mined, grown or produced. Goods are produced when, through manufacturing, processing or substantial and major assembling of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility form its components.
<b>7. INSPECTION AND TESTS</b>	
7.1	The Purchaser or its representatives shall have the right to inspect and/or to test the Goods to confirm their conformity to the Specifications. The Special Conditions of Contract and/or the Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing of the identity of any representatives retained for these purposes.
7.2	The inspections and tests may be conducted on the premises of the Supplier or its subcontractor(s), at point of delivery and at the Goods' final destination. Where conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser. Purchaser may not inspect equipment/materials at the works of manufacturers/vendors. On receipt of goods if it is found that it is of inferior quality, it will be shipped back at the cost of the supplier for replacement. The supplier shall also furnish copies of relevant reference IS/IEC/BS documents and test certificates.
7.3	Should any inspected or tested Goods fail to conform to the Specifications, the Purchaser may reject them, and the Supplier shall either replace the rejected Goods or make all alterations necessary to meet the requirements of the Specifications, free of cost to the Purchaser.
7.4	The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival in the Bhutan shall in no way be limited or waived by reason of the Goods' having previously been inspected, tested and passed by the Purchaser or its representatives prior to the Goods' shipment from the country of origin.
7.5	Nothing in this Clause 7 shall in any way release the Supplier from any Warranty or other obligations under the Contract.
<b>8. PACKING</b>	
8.1	The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy



## SECTION II GENERAL CONDITIONS OF CONTRACTS

	handling facilities at all points in transit.
8.2	The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified in the Special Conditions of Contract and in any subsequent instructions ordered by the Purchaser.
<b>9. DELIVERY AND DOCUMENTS</b>	
9.1	Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in the special terms and conditions of the bid document. The details of shipping and/or other documents to be furnished by the Supplier are specified in the Special Conditions of Contract.
9.2	For purpose of the Contract, "EXW" & "CIP", and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the International Chamber of Commerce, Paris, in the current edition of its publication commonly referred to as Incoterms.
<b>10. PATENT RIGHTS</b>	
10.1	The Supplier shall indemnify and hold the Purchaser harmless against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof.
<b>11. PERFORMANCE SECURITY</b>	
11.1	The Supplier shall cause performance security to be furnished to the Purchaser in the amount indicated in the contract form. Such performance security shall be provided, in a form satisfactory to the Purchaser, within 10 (ten) days after the Supplier's receipt of the notification of award of contract.
11.2	The proceeds of the performance security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its work under the Contract. The Supplier shall cause the validity period of the performance security to be extended for such period(s) as the contract performance may be extended pursuant to Clause 16.2
11.3	The performance security shall be denominated in a currency of the Contract and shall be in one of the following forms:
a	A Demand Draft/Cash Warrant/Bank Guarantee issued by a bank acceptable to the Purchaser.

## SECTION II GENERAL CONDITIONS OF CONTRACTS

<b>12. INSURANCE</b>	
12.1	All Goods supplied under the Contract shall be fully insured in the currency of Contract against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery, in the manner specified in the Special Conditions of Contract.
<b>13. WARRANTY</b>	
13.1	The Supplier warrants to the Purchaser that the Goods supplied under the Contract will comply strictly with Contract, shall be first class in every particular case and shall be free from defects. The Supplier further warrants to the Purchaser that all materials, equipment and supplies furnished by the Supplier or its subcontractors for the purpose of the Goods will be new, merchantable of the most suitable grade, and fit for their intended purposes.
13.2	This Warranty shall remain valid for twelve (12) months after the Goods, or any portion thereof, as the case may be, have been delivered and commissioned or for eighteen (18) months after the date of shipment from the port of loading in the country of origin, whichever period concludes earlier, unless specified otherwise in the Special Conditions of Contract.
13.3	<i>As a proof of performance warranty, the purchaser will not release the 10% performance security money (for a period not exceeding twelve (12) months or as indicated in the SCC clause 6 and Section IB-Annex-1) that will be deposited by the supplier at the time of signing contract until the time the materials supplied have been successfully field tested and proven their quality.</i>
13.4	The Purchaser shall promptly notify the Supplier in writing of any claim arising under this Warranty.
13.5	Upon receipt of such notice, the Supplier shall promptly repair or replace the defective Goods or parts thereof, without cost to the Purchaser other than, where applicable, the cost of inland delivery of the repaired or replaced Goods or parts from the port of entry to the final destination.
13.6	Without prejudice to Clauses 13.2 and 13.5 above, the Supplier shall promptly correct, at no cost to the Purchaser, any defect in any work of correction performed pursuant to Clauses 13.2 and 13.5 above, upon receipt of written notice of defect within twelve (12) months from acceptance of the corrected defect.
13.7	If the Supplier, having been notified, fails to remedy the defect(s) in accordance with the Contract, the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's expense. The Supplier's Warranty pursuant to this Clause 13 is without prejudice to any other rights or remedies, which the Purchaser may have against the Supplier under the Contract.

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<b>14. PAYMENT</b>	
14.1	The method and conditions of payment to be made to the Supplier under this Contract shall be specified in the Special Conditions of Contract.
14.2	The Supplier's request(s) for payment shall be made to the Purchaser in writing accompanied by an invoice describing, as appropriate, the Goods delivered and services performed, and by documents submitted pursuant to Clause 9 and upon fulfillment of other obligations stipulated in the Contract.
14.3	Payment shall be made promptly by the Purchaser, but in no case later than 30 (thirty) days after submission of an invoice or claim by the Supplier.
14.4	The currency or currencies in which payment is made to the Supplier under this Contract will be made in the currency or currencies specified in the Bid Form.
<b>15. PRICES</b>	
15.1	Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid, which the exception of any change in price resulting from a Change Order issued in accordance with Clause 3, or if applicable, adjustments authorized in accordance with the price adjustment provisions specified in the Special Conditions of Contract.
<b>16. EXTENSIONS IN THE SUPPLIER'S PERFORMANCE</b>	
16.1	Delivery of the Goods shall be made by the Supplier in accordance with the Contract Execution Schedule, pursuant to the Special Conditions of Contract.
16.2	The Supplier may claim extension of the time limits as set forth in the Contract Execution Schedule in case of:
a	Change in the Goods ordered by the Purchaser pursuant to Clause 3;
b	Delay of any materials, drawings or services, which are to be provided by the Purchaser; services provided by the Purchaser shall be interpreted to include all approvals by the Purchaser under the Contract;
c	Force Majeure pursuant to Clause 23; and
d	Delay in performance of work caused by orders issued by the Purchaser.
16.3	The Supplier shall demonstrate to the Purchaser's satisfaction that it has used its best endeavours or overcome such causes for delay, and the parties will mutually agree upon remedies to mitigate or overcome such causes for delay.

## SECTION II

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16.4	Notwithstanding Clause 16.2 above, the Supplier shall not be entitled to an extension of time for completion unless the Supplier, at the time of such circumstances arising, immediately has notified the Purchaser in writing of any delay that it may claim as caused by circumstances pursuant to Clause 16.2 above; and upon request of the Purchaser, the Supplier shall substantiate that the delay is due to the circumstances referred to by the Supplier.	
17. LIQUIDATED DAMAGES		
17.1	Subject to Clause 23, Force Majeure, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in the Special Conditions of Contract of the delivered price of the delayed goods or unperformed services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the percentage specified in the Special Conditions of Contract. Once the maximum is reached, the Purchaser may consider termination of the Contract pursuant to Clause 18, Termination for Default.	
18. TERMINATION FOR DEFAULT		
18.1	The Purchaser may, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, terminate the Contract in whole or in part:	
	a	If the Supplier fails to deliver any or all of the Goods within the time period(s) specified in the Contract, or any extension thereof granted by the Purchaser, pursuant to Clause 16; or
	b	If the supplier fails to perform any other obligation(s) under the Contract; and
	c	If the Supplier, in either of the above circumstances, does not cure its failure within a period of 10 (ten) calendar days (or such longer period as the Purchaser may authorize in writing) after receipt of a notice of default from the Purchaser specifying the nature of the default(s).
18.2	In the event the Purchaser terminates the Contract in whole or in part, pursuant to Clause 18.1 above, the Purchaser may procure, upon such terms and in such manner, as it deems appropriate, goods similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess cost for such similar goods. Notwithstanding the above, the Supplier shall continue performance of the Contract to the extent not terminated.	
19. TERMINATION FOR INSOLVENCY		
19.1	The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, without compensation to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent. Notwithstanding the above, such termination will not prejudice or	

## SECTION II

### GENERAL CONDITIONS OF CONTRACTS

	affect any right of action or remedy, which has accrued or will accrue thereafter to the Purchaser.
<b>20. TERMINATION FOR INCONVENIENCES</b>	
20.1	The Purchaser may, by written notice sent to the Supplier, terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination be for the Purchaser's convenience, the extent to which performance of work under the Contract is terminated, and the date upon which such termination becomes effect.
20.2	The Goods that are complete and ready for shipment within 30 (thirty) days after the Supplier's receipt of notice of termination shall be purchased by the Purchaser at the Contract prices and on the other Contract terms. For the remaining Goods, the Purchaser may elect:
a	To have any portion thereof completed and delivered at the contract prices and on the other Contract terms; and/or
b	To cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and for materials and part previously procured by the Supplier for the purpose of the Contract, together with a reasonable allowance for overhead and profit.
<b>21. RESOLUTION OF DISPUTES</b>	
21.1	The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
21.2	If, after 30 (thirty) days from the commencement of such informal negotiations, the Purchaser and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution by arbitration as described in Clause 21.3.
21.3	If the dispute is to be settled by arbitration, the Purchaser and the Supplier shall be entitled to appoint one member each, and third arbitrator will be appointed by both of them by mutual consent. If either the Purchaser or the Supplier fails to appoint a representative, or both of them cannot agree on the appointment of a third member within thirty (30) days from the date of agreement to refer the matter for arbitration, then the case will be referred to the proper court in Bhutan for adjudication. The award shall be final and binding on the parties. If the disputes are settled by Arbitration, the cost of Arbitration shall be borne by both parties equally.

## SECTION II

### GENERAL CONDITIONS OF CONTRACTS

<b>22. APPLICABLE LAW</b>	
22.1	The Contract shall be governed by and interpreted in accordance with the laws of the Bhutan.
<b>23. FORCE MAJEURE</b>	
23.1	In the event that the Supplier or any of its subcontractors or the Purchaser is delayed in performing any of their respective obligations under the Contract, and such delay is caused by Force Majeure, including but not limited to war, civil insurrection, fires, floods, epidemics, earthquakes, quarantine restrictions and freight embargoes, such delay may be excused as provided in Clause 16, and the period of such delay may be added to the time of performance of the obligation delayed.
23.2	If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof within 10 days. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
<b>24. ASSIGNMENT</b>	
24.1	The Supplier shall not assign, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.
<b>25. CONTRACT LANGUAGE</b>	
25.1	The Supplier hereby represents that it has sufficient knowledge of the English language fully to understand the contract, the contract shall be in the English language, and all documentation related hereto will also be in the English language.
<b>26. TAXES AND DUTIES</b>	
26.1	The Supplier shall be entirely responsible for all taxes, stamp duties and other such levies imposed outside the Purchaser's country.
26.2	The Supplier shall also be entirely responsible for all taxes payable in the Purchaser's country unless otherwise specifically exempted in the Special Conditions of Contract.
<b>27. HEADINGS</b>	
27.1	Headings, whether of Clauses or of other parts of the Contract, are for reference only and are not to be construed as part of the Contract.

**SECTION II**  
**GENERAL CONDITIONS OF CONTRACTS**

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<b>28. WAIVER</b>		
28.1	Failure of either party to insist upon strict performance by the other party of any provision of the Contract shall in no way be deemed or construed to effect in any way the right of that party to require such performance.	

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**SPECIAL CONDITIONS OF CONTRACT**

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SECTION III  
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SECTION III											
SPECIAL CONDITIONS OF CONTRACT											
The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract (GCC) and other documents incorporated in this package. The corresponding clause numbers of the GCC is indicated in parentheses.											
1. DEFINITIONS											
(GCC Clause 1)	GCC 1.1 (e) – The Purchaser is:  The General Manager Procurement Services Department Bhutan Power Corporation Limited Thimphu: Bhutan										
	The Consignee is:  The Manager Regional Stores Division Bhutan Power Corporation Limited Phuentsholing: Bhutan										
2. CONTRACT EXECUTION SCHEDULE											
2.1	The contract shall be executed as per the following schedule. The commencement of the contract period shall be assumed from the date of signing of the contract agreement if an agreement is executed; otherwise the notification of award/Purchase order date is an acceptance and shall constitute a contract between the parties.										
	<table><tr><th>Days</th><th>Activity</th><th>Remarks</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>		Days	Activity	Remarks						
Days	Activity	Remarks									
2.2	If delays are caused due to approval of drawings beyond the ten days of the submission date, the delivery period shall be extended accordingly. However, delays caused due to the need to rectify unclear/unacceptable drawings shall not be justification for time extension.										
2.3	Production and Delivery Program										
	The Supplier shall submit a detailed programme covering the manufacture, testing and delivery of the materials and equipment within the time stated in the bid documents. The program shall be in the form of a bar chart. The Supplier shall submit progress reports detailing progress against this programme and explaining any variations.										

SECTION III  
SPECIAL CONDITIONS OF CONTRACT

2.4	Suppliers Performance Ratings
	All suppliers shall be rated in terms of their performances according to applicable indicators as deemed fit by the Purchaser.
<b>3. INSPECTION and TEST</b>	
(GCC Clause 7)	All materials shall be inspected and tested as specified in the relevant IEC or BS or IS standards. The supplier must notify the purchaser in writing (and by fax to be confirmed with a mailed copy) within fifteen (15) days in advance once the goods are ready for dispatch. This should be notified to purchaser at the following address:
	The General Manager Procurement Services Department Bhutan Power Corporation Limited Thimphu: Bhutan  Facsimile: 00975 33583
	The period indicated is for deputing an inspector and has no connection with the stipulated delivery schedule. If the delay in the delivery of all or part of materials has been caused due to delay in nominating inspectors by the purchaser (after the inspection call has been received in writing by the purchaser in accordance with GCC clause 7 and Special Conditions of the Contract clause 3), the delivery period shall be extended by the period equivalent to the delay in sending inspectors by the purchaser for the whole or part of the materials.
<b>4. PACKING</b>	
(GCC Clause 8)	Generally, the supplier shall pack all the Goods as is required to prevent damage or deterioration in transit to the final destination indicated in the Bidding Documents. The packing should be sufficient to withstand rough handling and exposure to extreme temperatures, salt and precipitation during transit and/or storage as per GCC Clause 8.
<b>5. DELIVERY and DOCUMENTATION</b>	
(GCC Clause 9)	Upon delivery of the Goods to the transporters, the Supplier shall notify the Purchaser and mail the following documents to the Purchaser;
a	Copies of the Supplier's invoice showing Goods" description, quantity, unit price, and total amount.
b	Delivery Challan and truck receipt;
c	Manufacturer's or Supplier's warranty certificate;

**SECTION III**  
**SPECIAL CONDITIONS OF CONTRACT**

	d	Inspection certificate, issued by the nominated inspection agency, and the Supplier's factory inspection report;
	e	Certificate of Origin; and
	f	Packing List
<b>6. PERFORMANCE SECURITY</b>		
(GCC Clause 11)		The amount of performance security, as a percentage of the Contract Price, shall be ten (10) percent of the Contract Price within ten (10) days from the date of notification award of contract in the form of Demand Draft/Bank Guarantee/ Cash Warrant.
<b>7. INSURANCE</b>		
(GCC Clause 12)		As per GCC Clause 12, the supplier shall insure the goods for all risks including but not limited to theft, loss, damages to the goods and also liability for any loss, damages, injury and death caused to third party during the course of supply.
<b>8. WARRANTY</b>		
(GCC Clause 13)		The proceeds of performance security money shall be used against the warranty of the goods within the warranty period (not exceeding twelve (12) months after delivery of materials or as specified in SCC, clause 6).
<b>9. PAYMENT</b>		
(GCC Clause 14)		Full payment shall be released within one (1) month after delivery of goods in the Regional Stores Division, Bhutan Power Corporation Limited, Phuentsholing with receipt of test certificates, performance guarantee etc. in original and to the full satisfaction of purchaser.
		The supplier's request(s) for early payment given in writing against goods already delivered and accompanied by an invoice describing such goods may be made before verification of final bill as "Advance against Bills". This again will however be subject to only 75% of the total bill value and that no advances were paid against the specified order.
<b>10. PRICES</b>		
(GCC Clause 15)		Prices and the quoted rates are firm and valid for 90 (NINETY) days from the date of bid opening during which the purchaser may award the supply contract for the similar item.

SECTION III  
SPECIAL CONDITIONS OF CONTRACT

<b>11. LIQUIDATED DAMAGES</b>		
(GCC Clause 17)		As per GCC Clause 17.1, LD damages after the contractual period shall be a sum equivalent to one (1) percent per week on prorated basis of delivered price of the delayed goods or unperformed services for each week or part thereof of delay until actual delivery of performance, up to a maximum of ten (10) percent of the TOTAL CONTRACT PRICE <sup>1</sup> .
<b>12. RESOLUTION OF DISPUTES</b>		
(GCC Clause 21)		As per GCC Clause 21, the place of arbitration shall be Thimphu, Bhutan.
<b>13. TAXES and DUTIES</b>		
(GCC Clause 26.2)		As per GCC Clause 26, the quoted rates shall be firm with CIP/CIF Regional Stores Division, Bhutan Power Corporation Limited, Phuentsholing and inclusive of all the taxes payable outside the purchaser country.
		Though, evaluation shall be done exclusive of the BST, the taxes if applicable during supply shall be paid by the supplier at the point of entry which will be reimbursed by BPC after submission of relevant bills, invoices or cash memos and revenue receipts proving that Bhutan Sales Tax has been paid at the point of entry.
		The Contractor/Supplier tax (Tax Deduction at Source) @ 2% of the quoted price will be deducted from contract amount for Local Contractor/Suppliers irrespective of Manufacturers / Authorized Agents / Dealers / Wholesaler and the TDS Certificate would be provided by BPC. For Contractor / Suppliers quoting from outside Bhutan and not holding Bhutan Trade License, TDS @3% of the quoted price will be deducted from contract amount. However, as per the rules of the Department of Revenue and Customs, Ministry of Finance, Royal Government of Bhutan, for the Manufacturers quoting from outside Bhutan, TDS shall not be applicable.

<sup>1</sup>The LD charges are on the delayed portion of the goods and services only. The maximum LD charges are not limited to the delayed goods but shall instead be limited to the TOTAL CONTRACT PRICE.

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SECTION IV TECHNICAL SPECIFICATIONS		
A. COMMON TECHNICAL REQUIREMENTS		
1. CONTRACT PACKAGES		
	In the following sections, this document describes equipment required for the tender, in packages conveniently grouped together and which are summarized as shown in the Price Schedule.	
2. SCOPE OF WORK		
	The Contract includes the design, manufacture, testing, insurance and CIF delivery to the Purchaser’s Warehouse at Phuentsholing in Bhutan, of the Equipment as specified in the Price Schedule. Except for equipment manufactured and/or supplied from India, equipment shall be shipped via the port of Kolkata in India.	
	All necessary foundation bolts, rag bolts, nuts and washers, grouting packing and the like required for mounting and securing the equipment/assemblies should be included in this Contract.	
	Bidders shall furnish guaranteed particulars in the Schedules enclosed. Drawings of all components shall be provided together with the equipment type and reference number to ensure their identification.	
3. UNITS OF MEASUREMENT		
	Metric units of measurement (System International) shall be used on all Contract documentation. Angular measurement shall be in degrees with 90 degrees comprising one right angle.	
4. STANDARDS		
	The design material, construction, manufacture, inspection and testing of all equipment supplied under this Specification shall conform to the latest editions of the International Electrotechnical Commission (IEC) Specifications and other international standards where the material is not covered by IEC. Other national or international standards are accepted if they promise to confer equal or superior quality and performance than IEC or the specified standards.	
5. INSPECTION and TESTING		
	The materials will be inspected at the Manufacturer's works by the Purchaser's representative. Tests shall be performed in accordance with the relevant IEC standards.	

## SECTION IV TECHNICAL SPECIFICATIONS

	In the absence of IEC recommendations the tests must be equivalent at least to the conditions, provisions and definitions of the above-mentioned standards. The supplier shall give at least one month's notice for readiness of equipment for testing at the manufacturer's works. The tests shall be divided into the categories described below.																			
	<u>Routine Tests</u>																			
	All the routine tests specified by the standards shall be carried out. If the tests are not witnessed by the Purchaser's representative, test certificates shall be submitted to the Purchaser for approval. Dispatch clearance will be given only if the test results are approved.																			
	<u>Type Tests</u>																			
	Bidder shall include with his bid type test certificates, issued by an approved, reputed, independent testing laboratory. The type tests should have been carried out in the last five years.																			
	In addition, the Purchaser may call for type tests to be carried out at the Manufacturer's Works and to be witnessed by the Purchaser or his representative. Such tests will be on random samples at the discretion of the Purchaser and failure to meet the conditions of test could result in the rejection of a complete batch of equipment. <u>Type testing shall only be performed if the manufacturer is unable to provide type test certificates issued by an independent test laboratory of international repute.</u>																			
6.	<b>SITE CONDITIONS</b>																			
	<u>Local Conditions</u>																			
	<table><thead><tr><th>Basic Design Parameters</th><th>Basic Design Value</th></tr></thead><tbody><tr><td>Altitude</td><td>300 to 4000 meters</td></tr><tr><td>Ambient Air Temperature : Minimum Maximum</td><td>-10°C 37.5°C</td></tr><tr><td>Average Annual Isokeraunic Level</td><td>75 thunderstorm days</td></tr><tr><td>Average Annual Rainfall &amp; Period</td><td>1400 mm (May to September)</td></tr><tr><td>Climate</td><td>Varied (From tropical to severe winters)</td></tr><tr><td>Relative Humidity</td><td>20 – 100%</td></tr><tr><td>Seismic Acceleration : Horizontal Vertical</td><td>0.1 g 0.05 g</td></tr><tr><td>Snow Incidence and period</td><td>150 –300 mm (December to March)</td></tr></tbody></table>	Basic Design Parameters	Basic Design Value	Altitude	300 to 4000 meters	Ambient Air Temperature : Minimum Maximum	-10°C 37.5°C	Average Annual Isokeraunic Level	75 thunderstorm days	Average Annual Rainfall & Period	1400 mm (May to September)	Climate	Varied (From tropical to severe winters)	Relative Humidity	20 – 100%	Seismic Acceleration : Horizontal Vertical	0.1 g 0.05 g	Snow Incidence and period	150 –300 mm (December to March)	
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	Wind Pressure : Conductors Towers, Supports	45 kg/m <sup>2</sup> 195 kg/m <sup>2</sup>			
	<u>Special Conditions</u>				
	Equipment supplied under this Contract will be installed in locations which can be considered hostile to its proper operation. Factors which shall receive special consideration are operation in wide ranging temperatures and the presence of insects and vermin.				
	Special consideration shall also be given to the electrical characteristics of the equipment when installed at altitudes up to 4000 m. Appropriate correction factors shall be applied to characteristic values particularly the withstand voltages.				
7.	<b>ELECTRICAL CHARACTERISTICS</b>				
7.1	<u>Medium Voltage</u>				
	<b>Nominal System Voltage</b>	<b>kV</b>	<b>33</b>	<b>11</b>	<b>6.6</b>
	Maximum system voltage	kV	36	12	7.2
	Rated impulse voltage withstand (peak) (*)	kV	170	75	60
	Rated one minute power frequency withstand voltage (rms) (*)	kV	70	28	20
	Rated 1 sec. short time current (rms)	kA	16	16	16
	Rated peak short circuit current (peak)	kA	40	40	40
	(*) - see Clause 7.2				
7.2	<u>Low Voltage</u>				
	<b>Nominal System Voltage</b>	<b>V</b>	<b>400/230</b>		
	Maximum system voltage	V	440/254		
	System frequency	Hz	50		
	Rated one minute power frequency withstand voltage (rms)	V	2000		
	Rated impulse voltage withstand (peak)	V	6000		



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TECHNICAL SPECIFICATIONS

<b>8.</b>	<b>NUTS and BOLTS</b>	
8.1	Nuts and bolts for incorporation in the plant shall conform to ISO Metric. Other sizes or threads may be permitted only for threaded parts not to be disturbed once manufacturing is complete. Each bolt shall have rolled threads, one hexagonal nut and two washers. Thread length shall be 50 percent of bolt length or maximum 150 mm.	
8.2	All steel bolts and screwed rods shall be galvanized including the threaded portions. All associated nuts shall be galvanized with the exception of the threads which shall be oiled. The thickness of zinc coating shall be not less than 0.45 kg/sq. meter of surface area.	
8.3	All bolts, nuts and washers shall be of non-corroding material where they are in contact with non-ferrous parts in conductor clamps and fittings and elsewhere where specifically required by the Purchaser.	
<b>9.</b>	<b>SURFACE COATING and GALVANISING - GENERAL</b>	
9.1	All ferrous metalwork shall be provided with an effective galvanized or corrosion resistant paint treatment applied in accordance with the best trade practice. The paint treatment for each application shall be selected from the 'Paint Procedure' described in subsequent paragraphs.	
9.2	The formulation and application procedure for the paint shall be as recommended by the manufacturer for the appropriate exposure conditions.	
9.3	Coatings shall not be applied before vessels and chambers have passed any required pressure or vacuum tests. Precautions shall be taken to prevent corrosion occurring in the period of time between cleaning of the steel and commencing the painting.	
9.4	Adequate amounts of each type and color of finish coat as applied to the major equipment items shall be provided for "touch-up" purposes.	
9.5	The color of all top coats shall be approved by the Purchaser.	
9.6	<u>Paint Procedure</u>	
	a	For Mild Steel Items Exposed to Weather :
		(i) Blast Clean
		(ii) 1st coat - Inorganic zinc primer to give a dry film build of not less than 75 microns.
		(iii) 2nd coat - Chlorinated Rubber to give a dry film build of not less than 100 microns.
		(iv) 3rd coat - Chlorinated Rubber to give a

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**TECHNICAL SPECIFICATIONS**

		dry film build of not less than 75 microns.
	<b>b</b>	<b>Mild Steel Items Immersed in Oil :</b>
		(i) Blast Clean
		(ii) 1st and 2nd coats - Epoxy paint treatment system in accordance with coating manufacturer's recommendation for oil immersion.
		(iii) Total dry film build thickness shall not be less than 350 microns.
<b>9.7</b>	<b>Galvanizing</b>	
		Galvanizing shall be applied by the hot dipped process generally in accordance with ASTM A 123-78 for structural steel and ASTM A 153-73 for iron and steel hardware.
		For structural steel, galvanizing shall average not less than 0.61 kg/m <sup>2</sup> (no individual specimen shall show less than 0.55 kg/m <sup>2</sup> ) except for 6.35 mm and heavier materials in which case galvanizing shall average not less than 0.702 kg/m <sup>2</sup> (no individual specimen shall show less than 0.61 kg/m <sup>2</sup> ).
		For iron and steel hardware, galvanizing shall be in accordance with Table 1 of ASTM A 153-73. The zinc coating shall be smooth, clean, of uniform thickness and free from defects. The preparation for galvanizing and the galvanizing itself shall not adversely affect the mechanical properties of the coated material.
<b>10.</b>	<b>PACKING and SHIPPING</b>	
<b>10.1</b>		The equipment/material shall be packed in new containers. Groups of containers/cartons may be packed in boxes whose total weight shall not exceed 200 kg.
<b>10.2</b>		Containers/cartons and boxes shall be strong and sturdy in construction to withstand ocean shipping, several times loading and unloading at ports, transport on rough roads, storage for five years in tropical areas and hauling and handling during field erection. The boxes should also be protected by suitable lagging or galvanized steel strips.
<b>10.3</b>		A layer of waterproof material shall be provided inside the container/carton and boxes to protect the equipment from water seepage.
<b>10.4</b>		All cases shall be clearly identified giving particulars of manufacturer's name and type of equipment. All identification marks on the outside of cases shall be waterproof and permanent. All electrical equipment shall be adequately sealed and desiccating agents used where necessary to prevent damage from consideration.
<b>10.5</b>		The Contractor shall protect all steelwork before shipment, to prevent corrosion and/or

**SECTION IV**  
**TECHNICAL SPECIFICATIONS**

	damage. Bundles of steel sections shall be properly tied together by an approved method and care shall be taken to ensure that they are robust and that they can be handled easily during shipment.
10.6	Bolts and nuts shall be double bagged and crated for shipment. Crating of dissimilar metals is unacceptable.
<b>11. MARKING</b>	
11.1	The following information shall be marked on the containers/cartons as well as boxes:
	a Suppliers' name, Project Title and Contract Reference
	b Identification Number
	c Net/Gross weight
	d Purchaser's name with other dispatch particulars such as destination.
<b>12. CABLE / CONDUCTOR DRUMS</b>	
12.1	Insulated cables and bare conductors shall be wound on non-returnable seasoned wooden drums provided with lagging of adequate thickness and treated to an approved international standard by vacuum impregnation with copper-chrome-arsenate (CCA) preservative to resist rotting and termite and fungus attacks. Drums with an outside diameter exceeding 2.0 meters and an outside width exceeding 1.4 meters shall not be used. The central hole of the drums shall be reinforced with a steel plate of thickness not less than 10 mm, or be fitted with suitable steel hub bushing to suit an axle diameter of 95 mm.
12.2	The drums shall be new and sturdy in construction so as to withstand several times loading and unloading, transport on rough roads, storage for five (5) years in tropical areas and hauling and handling during field erection etc. In the event that the drums are received at the destination in damaged condition thereby, preventing rolling out of cable, the Supplier shall supply extra drums at his own cost. Also, the cost incurred by the Purchaser in rewinding the cable from the damaged drums onto the new drums will be deducted from the amount due to the Supplier.
12.3	Internal and external surfaces of the drum shall be painted with bitumen based paint. A layer of waterproof material shall be provided on the barrel under the cable and on the inner surfaces of the flanges. Another layer of waterproof material shall be provided over the outer layer of cable under lagging.
12.4	Drums shall be adequately protected by securely fastening substantial wooden battens around the periphery. These battens shall be secured by means of steel tap bindings.
12.5	Cables shall be securely fastened around the periphery of the drum. Cables shall be supplied with both ends properly capped, and protected against damage. Each drum and one of each cable length shall bear a metal label detailing manufacturer's name,

[illegible]

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<b>B.</b>	<b>ENERGY METERS</b>																
<b>1.</b>	<b>STATIC METERS</b>																
<b>1.</b>	<b>SCOPE OF WORK</b>																
	This specification covers the design, engineering, manufacture, testing and calibration at manufacturer's works before dispatch, packing, supply and delivery of Class 1.0 accuracy, electronic energy meter, suitable for connection to LT single phase 2 wire 220V-240V systems. Meter should be suitable for indoor installation. The static whole current electronic meter shall offer current range of 10-60A (first digit indicates the Basic Current & second digit indicates the Maximum Current of the respective meters) for tariff purposes, as per requirement given in this specification.																
<b>2.</b>	<b>STANDARDS</b>																
	Unless specified elsewhere in this specification, the performance & testing of the meters shall conform to the following Indian/International standards, to be read with up to-date and latest amendments/revisions thereof.																
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	Meter matching with requirements of other national or international standards which ensure equal or better performance than the standards mentioned above shall also be considered. When the equipment offered by the bidder conforms to standards other than those specified above, salient points of difference between standards adopted and the standards specified in this specification shall be clearly brought out in the relevant schedule.																
<b>3.</b>	<b>CLIMATIC CONDITIONS</b>																
	The meters to be supplied against this specification shall be suitable for satisfactory																

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	continuous operation under the local conditions specified in the common technical specifications.								
<b>4.</b>	<b>SUPPLY SYSTEM</b>								
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Rated Frequency	50 Hz								
<b>5.</b>	<b>POWER FACTOR RANGE</b>								
	The meter shall be suitable for full power factor range from zero (lagging) through to Unity to zero (leading).								
<b>6.</b>	<b>POWER SUPPLY VARIATION</b>								
	The meter should be suitable for working with following supply system variations.								
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	If phase to phase voltage is applied for 15 minutes between phase and neutral of the meter, the meter should not get damaged and continue to record correctly within class 1.0 accuracy after restoration of normal supply.								
<b>7.</b>	<b>ACCURACY</b>								
7.1	Class of accuracy of the meter shall be 1.0. The accuracy shall not drift with time.								
<b>8.</b>	<b>POWER CONSUMPTION</b>								
8.1	<u>Voltage Circuit:</u> The active and apparent power consumption in each voltage circuit including the power supply of meter of reference voltage, reference temperature and reference frequency shall not exceed 1.0 watts and 4 VA.								
8.2	<u>Current Circuit:</u> The apparent power taken by Current circuit at basic current reference and reference temperature shall not exceed 1 VA.								
<b>9.</b>	<b>STARTING CURRENT</b>								

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9.1	<p>The meter shall start registering energy at 0.2% of basic current at unity power factor and shall be fully functional within five seconds after the rated voltage is applied.</p> <p>Running at no load: When voltage is applied and no current flows in the current circuit, the test output of the meter shall not produce more than one pulse.</p>
<b>10. MAXIMUM CONTINOUS CURRENT</b>	
	<p>The rated maximum current for the meter shall be 100% of I<sub>max</sub> at which the meter purports to meet the accuracy requirement. Meter terminals should be suitable to carry 150% of I<sub>max</sub> for the duration of two hours.</p>
<b>11. GENERAL and CONSTRUCTIONAL REQUIREMENTS</b>	
11.1	<p>Meters shall be designed and constructed in such a way so as to avoid causing any danger during use and under normal conditions. However, the following should be ensured.</p> <ul style="list-style-type: none"> <li>• Personal safety against electric shock</li> <li>• Personal safety against effects of excessive temperature.</li> <li>• Protection against spread of fire</li> <li>• Protection against penetration of solid objects, dust &amp; water</li> </ul>
11.2	<p>The meter shall be designed with application specific integrated circuit and shall be manufactured using SMT (Surface Mount Technology) components. Power supply and voltage divider circuits may be of PTH technology. The meter should be housed in a safe, high grade engineering Polycarbonate casing of projection mounting type.</p>
11.3	<p>All insulating material used in the construction of meters shall be non-hygroscopic, non-ageing and of tested quality. All parts that are likely to develop corrosion shall be effectively protected against corrosion during operating life by providing suitable protective coating.</p>
11.4	<p>The meter shall conform to the degree of protection IP 51 for protection against ingress of dust, moisture and vermin's.</p>
11.5	<p>The meter shall be supplied with a transparent extended terminal block cover (ETBC).</p>
11.6	<p>The meter-base, meter cover, terminal block and ETBC shall be made of unbreakable, high grade, fire resistant, non-flammable, polycarbonate or equivalent high grade and good quality engineering plastic. The terminal block should have terminal holes and shall be of sufficient size minimum 9.0 mm (diameter) to accommodate the conductors, meeting the requirement of IEC 62052-11.</p>
11.7	<p>The translucent meter cover shall have one window if front cover is not fully</p>

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	transparent. The window shall be of transparent, high grade UV stabilized engineering plastic for easy reading of all the displayed values/parameters, and observation of operation indicator.
	The window shall be ultrasonically welded with the meter cover such that it cannot be removed undamaged without breaking the meter cover seals.
11.8	The manner of fixing the conductors to the terminal block shall ensure adequate and durable contact such that there is no risk of loosening or undue heating. Screw connections transmitting contact force and screw fixing which may be loosened and tightened several times during the life of the meter shall be such that the risk of corrosion resulting from contact with any other metal part is minimized. Electrical connections shall be so designed that contact pressure is not transmitted through insulating material. The termination arrangement shall be of cage clamp design, thus preventing the need of terminating through lugs. The terminals & terminal screws shall be made of Zn plated MS / tin plated Brass to provide better conductivity. The clearance and creepage distance shall conform to relevant clause of IEC standard.
11.9	The meter shall be compact in design. The entire construction shall be capable of withstanding stresses likely to occur in actual service and rough handling during transportation. The meter shall be convenient to transport and immune to shock and vibration during transportation and handling.
11.10	The meter shall have 3 fixing holes, one at top and two at bottom. The top hole shall be such that the holding screw is not accessible to the consumer after fixing the meters. The lower fixing screws shall be provided under the sealed terminal cover.
<b>12.</b>	<b>ANTI-TAMPER FEATURES</b>
	The meter should have features to prevent/detect common ways of tamper and fraud.
12.1	<u>Reversal of line and load terminals</u> Even on interchanging the load and line wires the meter shall register forwarded energy. The reverse indication in the form of LCD display or LED shall be available under such condition.
12.2	<u>Interchanging of phase and neutral wires</u> Even on interchanging the phase and neutral wires the meter shall register forwarded energy.
12.3	<u>Drawing of current through local earth</u> The meter shall register forwarded energy even if the load is not terminated back to the meter and instead current is drawn partially or fully through a local earth irrespective of the phase and neutral connections to the meter. The earth indication in the form of LCD display shall be available.



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12.4	<p><u>Drawing of load by disconnecting Neutral of meter &amp; outgoing Earth</u></p> <p>When neutral is disconnected from both load side and supply side, the meter should record energy as per rated parameters (Vref, UPF &amp; actual current). However, meter shall start registering energy at a current of 1.0 Amps under these tamper conditions. Accuracy should be within <math>\pm 4\%</math> for this case.</p>
12.5	<p><u>Influence of external High Magnetic Field</u></p> <p>Meter shall be provided with appropriate magnetic shielding so that any external magnetic field (A.C. electromagnet or D.C. magnet) as per the value specified in IEC applied on meter would not affect the proper functioning of meter.</p> <p>However, the meter should log the presence of abnormal magnetic induction with date &amp; time in case the meter is affected, under such conditions the positive variation may be beyond 4%. Meter should record energy at I<sub>max</sub> whenever the meter gets affected during that condition.</p> <p>The meter shall be capable of recording the following tamper events in memory (minimum 5 each) with date and time stamp along with snapshots of V, I, PF and kWh.</p> <ul style="list-style-type: none"> <li>• Current reversal.</li> <li>• Magnetic influence in case meter is affected.</li> <li>• Neutral Disturbance in case meter is affected.</li> <li>• Load imbalance (earth/neutral looping).</li> </ul>
	The meter shall also have the capability of functioning even when only single wire is connected (even when neutral wire is removed from both the meter terminals).
12.6	<p><u>Meter Body Opening</u></p> <p>The meter shall also have provision for detection and logging of opening of meter cover. Meter must detect / log with date and time meter body opening tamper, body opening tamper must also be logged in absence of power supply.</p>
12.7	<p><u>D.C. Immunity</u></p> <p>The meter should not saturate on passing of direct current, which can cause the meter either to stop recording or record inaccurately as per IEC</p>
12.8	<p><u>Neutral Disturbance</u></p> <p>The measurement by meter shall not get influenced by injection of spurious signals in neutral of meter. In case the meter accuracy is disturbed under neutral disturbance, it should be able to log the event and record at I<sub>max</sub></p>
12.9	<p><u>Over Current</u></p> <p>Meter should record Over current tamper with date and time.</p> <p>The meter shall offer a link less design such that there is no isolation link provided between the current and voltage circuit and hence there is no possibility of tampering with the same.</p>

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<b>13. DISPLAY</b>	
13.1	The measured value(s) shall be displayed on Liquid Crystal display (LCD) or Light Emitting Diode (LED) display unit / register. The height of the digit shall be minimum 8.0 mm. The kWh energy registration under normal power on condition shall take place on 5 complete digits and 1 decimal.
13.2	The data should be stored in non-volatile memory (NVM). The non-volatile memory should retain data for a period of not less than 10 years under un-powered condition. Battery back-up memory will not be considered as NVM
13.3	The register shall be able to record and display starting from zero, for a minimum of 1500 hours, the energy corresponding to rated maximum current at reference voltage and unity power factor. The register should not roll over in between this duration.
13.4	In addition to providing serial number of the meter on the display plate, the meter serial number shall also be programmed into meter memory for identification through communication port for HHU/meter reading print out.
<b>DISPLAY SEQUENCE</b>	
The meter shall display the required parameters in two different modes as follows	
<b>A</b>	<b>Auto Display Mode</b>
The following parameters hereinafter referred to as “Billing Parameters” (B.P) shall be displayed in an auto-cycle mode, in the following sequence:	
	<ol style="list-style-type: none"> <li>1. LCD Test</li> <li>2. Real Time</li> <li>3. Date</li> <li>4. Cumulative Active energy import (forwarded) reading (kWh)</li> <li>5. Last Bill Active Forwarded energy</li> <li>6. Instantaneous Load (kW)</li> <li>7. Last Bill Maximum demand (kW)</li> <li>8. Billing period counts</li> <li>9. Cumulative Tamper Occurrence Count</li> </ol>
Each parameter shall be on meter display for 10 seconds and the time between two auto-cycles shall be 120 seconds.	
<b>B</b>	<b>Push Button Mode</b>
In addition to the auto display mode parameters, the following parameters shall be displayed on pressing the push button as well as downloadable to the BCS through the CMRI.	
	<ol style="list-style-type: none"> <li>1. LCD Test.</li> </ol>

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	<ul style="list-style-type: none"> <li>2. Real Time</li> <li>3. Date</li> <li>4. Instantaneous phase voltage, current</li> <li>5. Maximum demand kW for Current month</li> <li>6. Supply Frequency</li> <li>7. Instantaneous PF</li> </ul>
	The meter shall also be capable of offering a high resolution display mode which shall enable conducting of dial testing by the user in the shortest possible time and hence as a minimum; the meter shall be capable of offering a resolution of 4 digits after decimal (and 2 digits before decimal) for the high resolution kWh display.
<b>14.</b>	<b>MAXIMUM DEMAND REGISTRATION and RESET</b>
	Meter shall continuously monitor & calculate the average maximum demand for each demand interval time of 30 minutes and maximum of these in a calendar month shall be stored along with date and time when it occurred. The maximum demand shall automatically reset at 24:00 hrs. of the last date of each calendar month for which minimum 30 years calendar shall be programmed by the manufacturer.
	The integration period shall be set as 30 minutes, on real-time basis.
	The billing purpose parameters (active forwarded energy, maximum demand in kW) shall be registered and shall be available for a minimum period of last 6 months.
<b>15.</b>	<b>TIME OF USE MONITORING</b>
	The meter shall offer the capability of time of use monitoring for energy. Minimum 2 registers shall be capable of being configured for TOD monitoring for Peak/Off peak hours.
<b>16.</b>	<b>LOAD PROFILE RECORDING</b>
	The meter shall be capable of monitoring and recording load profile information for kW demand for every 30 minutes interval for at least 30 days duration.
<b>17.</b>	<b>SELF DIAGNOSTICS FEATURE</b>
	The meter shall be capable of performing complete self diagnostic check to monitor integrity of data memory location at all time. The meter shall have indication for unsatisfactory/nonfunctioning/malfunctioning of the following:
	<ul style="list-style-type: none"> <li>a) Time and date on meter display</li> <li>b) All display segments on meter display</li> <li>c) Real Time Clock (RTC) status in meter reading prints out at BCS end</li> <li>d) Non-volatile Memory (NVM) status in meter reading prints out at BCS end</li> </ul>
<b>18.</b>	<b>METER READING POWER OFF MODE</b>

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	Provision to read the meter in no power condition shall be made. In case of power failure Auto mode shall not function. The same push button shall be used for displaying the Billed kWh, Billed month maximum demand kW, Average PF last Month, Billed tamper count shall be displayed. No power shall be consumed from this circuit when mains are available. In case of power failure meter data download for Historical energy, maximum Demand & all the tamper events through CMRI (common meter reading instrument) shall be possible. Battery life shall be considerably long preferably 10 years.
<b>19.</b>	<b>COMMUNICATION PORT</b>
	The meter should have a galvanically isolated optical communication port for data communication with CMRI. The port shall be compatible with IEC 1107/PACT/ANSI and shall be capable of being hooked to a remote metering device such as modem, etc. for future to enable Automatic meter reading. For local meter reading, it shall be possible to do entire meter data download within 2 minute (containing instantaneous values, load survey, 6 histories and events)
<b>20.</b>	<b>CMRI/BSC REQUIREMENTS</b>
	The Common Meter Reading Instrument (CMRI) should be capable of being loaded with user friendly software (MS-DOS 5.0 or higher version compatible) for reading/downloading meter data. Windows based Base Computer Software (BCS) shall be provided for receiving data from CMRI and downloading instructions from base computer software to CMRI.
	This BCS should have, amongst other requirements, features and facilities described later in this specification, the facility to convert meter reading data into user definable ASCII file format so that it may be possible for the user to integrate the same with the user's billing data and process the selected data in desired manner. All the data available in the meter including energy, MD, and history data should be convertible to user defined ASCII file format for integration with third party software. The vendor shall supply necessary base computer software for reading / viewing of meter data and converting to user defined ASCII files formats. The user shall have the flexibility to select the parameters to be converted into ASCII file. The vendor shall also supply the necessary CMRI software.
<b>21.</b>	<b>MARKING OF THE METER</b>
	The marking on every meter shall be in accordance with relevant clauses of IEC standard. The basic marking on the meter nameplate shall be as follows:
	<ul style="list-style-type: none"> <li>a) Manufacturer's name &amp; trade mark</li> <li>b) Type Designation</li> <li>c) No. of phases &amp; wires</li> <li>d) Serial number</li> </ul>

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	<ul style="list-style-type: none"> <li>e) Year of manufacture</li> <li>f) Reference Voltage</li> <li>g) Rated Current</li> <li>h) Principal unit(s) of measurement</li> <li>i) Meter Constant ( imp/kwh)</li> <li>j) Class index of meter</li> <li>k) "Property of BPC"</li> <li>l) Purchase Order No. &amp; Date</li> </ul>	
<b>22.</b>	<b>CONNECTION DIAGRAM</b>	
	The connection diagram of the meter shall be clearly shown on terminal cover	
<b>23.</b>	<b>OUTPUT DEVICE</b>	
	The meter shall have a test output accessible from the front and capable of being monitored with suitable testing equipment while in operation at site. The test output device shall be provided in the form of LED output.	
	The relation between test output and the indication on display shall comply with the marking on the name plate (imp per kWh).	
<b>24.</b>	<b>ELECTRO-MAGNETIC COMPATIBILITY and INTERFERENCE REQUIREMENT</b>	
	The meter shall meet EMI/EMC requirements as specified in the relevant standards described in Clause 4.0 of this specification.	
<b>25.</b>	<b>MINIMUM TESTING FACILITIES</b>	
	The Supplier should have the necessary minimum testing facilities for carrying out the following tests:	
	<ul style="list-style-type: none"> <li>• AC voltage test</li> <li>• Insulation resistance test</li> <li>• Test of limits of errors</li> <li>• Test of meter constant</li> <li>• Test of starting condition</li> <li>• Test of no load condition</li> <li>• Repeatability of error test</li> <li>• Test of power consumption</li> </ul>	
	The manufacturer should have duly calibrated Reference standard meter of Class 0.2 accuracy or better. Manufacturer also should possess fully computerized meter test bench system for carrying out the relevant routine/acceptance tests as well as facility to generate test reports for each and every meter tested.	

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26. TESTS		
	The test reports/certificate/records for all type tests specified having been successfully performed on the type of the meter offered shall be submitted with the tender. The bidder shall clearly bring out the deviations from this specification clause by clause whether on account of tests or manufacturing process or features incorporated in the meter. The tender lacking with above information and without supporting test reports for meter meeting the requirement of tests laid in this specification are likely to be rejected.	
	<u>Type Tests:</u> The Energy meter offered shall be fully type tested at any accredited test laboratory as per IEC standards but test reports shall not be more than three years old from the date of opening of bid. The bidder shall furnish type test reports along with the bid.	
	<u>Acceptance Test :</u> All acceptance tests as stipulated in the relevant standards shall be carried out by the supplier in the presence of the purchaser's representative.	
	<u>Routine Tests:</u> All routine tests as stipulated in the relevant standards shall be carried out and routine test-certificates/reports shall be submitted to the purchaser for approval and also placed inside individual meter packing. Three copies of user manual shall be required in soft copy (CD).	
2. ELECTROMECHANICAL METERS/STATIC METERS		
1. SCOPE OF WORK		
	The scope includes the design, manufacture, testing, insurance and CIF delivery to the Purchaser's Warehouse at Phuentsholing in Bhutan, of the Customer Equipment listed below:	
	a	Low Voltage Electromechanical Energy Meters (Three Phase)
	b	High Voltage Static Trivector Energy Meters
2. STANDARDS		
	The equipment shall comply with the latest editions of, and amendments to, the international standards listed below. Where any provision of this specification differs from those of the standards listed hereafter, the provision of this specification shall apply.	
	IEC 514	Acceptance Inspection of Class 2 Alternating Current Watt Hour Meters
	IEC 521	Class 0.5, 1 and 2 Alternating Current Watt Hour Meters
	IEC 529	Classification of degrees of protection provided by enclosures (IP Code); and

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	IEC 687	Any other relevant IEC standards Class 0.2, 0.5 alternating current
		HT Static Trivector meter
		Relevant IEC standard for acceptance inspection of Class 0.2, 0.5 AC HT Static Trivector meter
<b>3.</b>	<b>CLIMATIC CONDITIONS</b>	
		The meters to be supplied against this specification shall be suitable for satisfactory continuous operation under the local conditions specified in the common technical specifications.
<b>4.</b>	<b>ADJUSTMENT, CALIBRATION &amp; LOSSES</b>	
		The meters shall be adjusted and pre-calibrated at the factory in accordance with the latest relevant IEC standards such that the percentage error limits are not exceeded for different current values. Also power losses for the voltage and current coils shall be within the limits specified in the relevant IEC standards.
<b>5.</b>	<b>CONSTRUCTION</b>	
		All materials required for the manufacture and assembly of meters shall be suitable for use in an extreme climate. All components shall have a tropical finish.
		The terminals for LT meters shall be suitable for terminating from 4 mm <sup>2</sup> to 25 mm <sup>2</sup> copper or aluminium service drop conductors. The conductors can be either soft or hard drawn.
		For the static/electronic meter, the meter shall be fitted with an integral surge arrester to protect the unit from high-energy surges caused by lightning.
		Construction of the meter shall include security features designed to discourage unauthorised access into the meter and to provide safeguards against other well-known methods of tampering. Such security features may include shear head screws to prevent disconnection of the potential link within the terminal chamber; internal potential connections (making it impossible to isolate the potential circuit without removing the meter cover); tamper-proof cover screws designed so that the screws can be tightened but not undone except by over tightening and shearing the screw; provision for meter sealing; and non-reverse running devices (in case of electromechanical meters) to prevent the rotor shaft rotating and registering under reverse power flow conditions.
		The front plate of the meter shall carry the following information written in English language :
	a	Information as per IEC 1036, IEC 521, IEC 687 and any other relevant IEC standards.
	b	Property of Bhutan Power Corporation, Thimphu, Bhutan
	c	Registration number



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	The forward direction shall be clearly indicated and shall be from left to right when viewed from the front of the meter (for electromechanical meters).	
<b>1.</b>	<b>ELECTROMECHANICAL METERS</b>	
1.1	The three phase meters shall be capable of measuring loads with the required accuracy upto the maximum continuous rating given. For example, three phase 60 amps meter should be able to measure with the given accuracy any load upto 60 amperes	
1.2	Three phase kWh meters are required for consumer metering at LT voltage levels and shall be suitable for both <b><i>balanced and unbalanced load</i></b> conditions. These meters shall be suitable for mounting indoors. The degree of protection of the enclosure shall be to IP 52 or better.	
1.3	Each meter shall be equipped with single cyclometer register having at least five digits (Three phase meters). For three phase whole current meters, the readings shall be given directly in kilowatt-hour (kWh) without the use of multiplication factors. The manufacturer shall provide details of multiplication factor application wherever necessary for the meters, if at all such multiplication factors are required to calculate the actual readings. Also, for the CT operated meters, the manufacturers shall mention whether the meter constant given on the nameplate of the meter is the actual meter constant (meter constant as seen from the primary side of the CT) or is the secondary meter constant (meter constant as seen from the secondary side of the CT). The CT operated meters should have the flexibility to operate at any primary values of CT, the manufacturers shall provide all the details of calculation of the required multiplication factor to arrive at the actual readings for the different values of the primary CT rings installed in the circuit.	
1.4	<b><i>The manufacturer/supplier shall provide detail connection diagrams and other necessary operation instruction manuals.</i></b>	
1.5	The meters should be able to function for many years without servicing and at the same time maintaining a high degree of accuracy. The manufacturer shall specify the maximum length of time for which a meter can be operate with sustained accuracy.	
1.6	Meters shall maintain their accuracy in accordance with the limits set out in IEC 521 and IEC 1036 throughout their working life	
<b>2.</b>	<b>STATIC HT TRIVECTOR METER</b>	
2.1	The meters shall be suitable for use on HT voltages for primary values ranging from 11kV to 66kV and any desired primary load current. In other words, the meters shall be flexible to be used for any values of primary CT and PT. <b><i>The meters shall be supplied along with necessary hardware equipment (optical cord, etc) and software for programming of the meters for the desired conditions. You will have to supply atleast 3 optical cords with the package.</i></b> Also, the meters should be programmable to take	



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	measurements at <b>5 Amps or 1 Amps of the secondary CT ratings</b> . In otherwise, the meters should have the flexibility to operate at <b>5 A or 1 A</b> . <i>The meters should give direct reading once programmed. However, if the programming cannot be done, the supplier/manufacturer will also indicate the method to manually calculate the multiplication factors to obtain actual readings from the meter display.</i>
2.2	The meter shall be suitable for both balanced and unbalanced loading conditions. Some meters should be unidirectional while the rest should be bi-directional as per the BOQ.
2.3	The meters shall be able to measure multi-parameters like the <b>Active energy/demand, Reactive energy/demand, Apparent energy/demand, peak demand for a given period</b> (with programmable demand time interval-say, 15 mins, 30 mins etc.), <b>harmonics, power factors, currents, voltages</b> , etc.
2.4	The meters shall have the facility to <b>log events</b> such as power theft attempts, phase reversal, earthing neutral, neutral missing, etc. The meters shall be capable of logging more than 60 events and data logging for 18 months billing cycle
2.5	The meters shall be suitable for mounting outdoors (as per Section IV of this document) and shall be supplied complete with nuts and bolts for fixing the meters outdoor/indoor. The degree of protection of the enclosure shall be to IP 54 or better.
2.6	The meters shall be suitable for both <b>3 phase 4 wire as well as 3 phase 3 wire HT metering configurations</b> as desired by the user. <i>The manufacturer supplier shall provide detail connection diagrams of the meters to the CT/PT unit in both 3 phase 3 wire and 3 phase 4 wire configurations and also provide detail operation instruction manuals.</i>
2.7	The supplier/manufacturer shall provide free consultancy services and also provide the required installation supports and shall send its personnel in case the purchaser faces problems with the installation or facilitating proper functioning of the meters.
2.8	The meters will be required to function for many years without servicing and at the same time maintaining a high degree of accuracy. The manufacturer shall specify the maximum length of time for which a meter can be operate with sustained accuracy.

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TECHNICAL SPECIFICATIONS

<b>C. POLE FITTINGS and ACCESSORIES</b>		
<b>1. GENERAL</b>		
	This specification represents the minimum requirements for the works. The Supplier shall provide equipment, which meets or exceeds these minimum requirements.	
	These items are being sought as additions to existing networks; it is essential to maintain compatibility with existing hardware and line design, as well as with established local work practices and methods.	
<b>2. TECHNICAL SPECIFICATIONS</b>		
<b>1. STAY CLAMP ASSEMBLY</b>		
1.1	Stay Clamp Assembly (for 10m and 9m pole)	
	a. Stay clamp (1 set consists of 2 clamps) (dia. 114.3mm)	1 set
	b. GI nuts and bolts, 16 mm dia., 75 mm length, complete with one flat and one spring washer	2 set
1.2	Stay Clamp Assembly (for 7.5m pole)	
	a. Stay clamp (1 set consists of 2 clamps) (dia. 88.9mm)	1 set
	b. GI nuts and bolts, 16 mm dia., 75 mm length, complete with one flat and one spring washer	2 set
<b>2. LBS/ABS HANDLE SUPPORT</b>		
	a. SMC 75, 3110 mm length, complete with necessary holes	1 Nos
	b. Full Clamp	2 Nos
	c. GI nuts and bolts, 16 mm dia., 75 mm length, complete with one flat and one spring washer	4 set
<b>3. ‘H’ FRAME CROSSARM ASSEMBLY for 11kV and 33 kV LINE</b>		
	a. SMC 100, 3150 mm length, complete with necessary holes	2 Nos
	b. MS flat string bracing, 80x6 mm, 227 mm length, complete with necessary holes	6 Nos
	c. ‘M’ Clamp	4 Nos
	d. GI pipe, 20 mm dia., 125 mm length	2 Nos
	e. GI pipe, 20 mm dia., 112 mm length	4 Nos
	f. GI nuts and bolts, 16 mm dia., 175 mm length, complete with one flat washer and one spring washer	6 sets
	g. GI nuts and bolts, 16 mm dia., 150 mm length, complete with one flat	6 sets

[illegible]

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<b>D. DISTRIBUTION PILLARS</b>	
1.1	The Distribution Pillar shall be sheet steel, robust, dust, weather and vermin proof, providing a degree of protection of IP 52, for indoor use and IP 54, for outdoor use.
1.2	Sheet steel used shall be cold rolled, of minimum thickness 2.5 mm, smooth finished and appropriately stiffened to provide adequate strength.
1.3	The Distribution Pillar shall have hinged doors, with IEC type lock and pad locking facility.
1.4	Doors and other covers shall be fitted with neoprene gaskets, to satisfy the IP 52 and IP 54 requirements, to prevent ingress of dust, moisture and vermin.
1.5	All live parts shall have a minimum phase to phase and phase to earth clearance in air of 25 mm and 20 mm respectively.
1.6	The removable cable gland plate of 2.5 mm cold rolled sheet steel is included. The interior cabling space is to be as per drawings.
1.7	Requirements include an external earthing terminal and 19 mm x 6 mm aluminium alloy grade earthing strip inside should be provided.
1.8	The Distribution Pillar shall be supplied complete with a hot dipped galvanised steel fixing assembly, to allow the pillar to be mounted on one transformer station steel pole, at a height approximately 450mm above ground level.
1.9	<b>Painting</b>
1.9.1	The material shall be free flowing powder based on synthetic resins, hardeners, pigments, fillers and additives suitable for application by standard methods, for example, electrostatic spraying, tribostatic spraying, fluidized bed coating, etc. It shall give a continuous, smooth and hard film when applied by one of the above methods and stoved for drying. The applicable IS standard IS 13871 (1993) and relevant IEC standard.
1.9.2	All sheet steel work shall be phosphated in accordance with the following procedure and in accordance with relevant standards IS: 6005 for phosphating iron and steel.
1.9.3	Oil, grease, dirt and swarm shall be thoroughly removed by emulsion cleaning.
1.9.4	Rust and scale shall be removed by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying.
1.9.5	After phosphating, through rinsing shall be carried out with clean water, followed by final rinsing with dilute dichromate solution and oven drying.

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1.9.6	The final finished thickness of paint film on steel shall not be less than 50 to 60 microns.
1.9.6	Finished painted appearance of equipment shall present an aesthetically pleasing appearance, free from dents and uneven surfaces.
1.9.7	Materials not complying with the foregoing requirements are liable to be rejected.
1.10	<u>Main BusBar</u>
1.10.1	Main busbars shall be of aluminium alloy of grade E9IE, or equivalent, conforming to relevant Standards.
1.10.2	Busbars shall be horizontal, however staggered from front to rear, for the different phases, as per the drawing.
1.10.3	All busbar shall be solid, without joints and shall be rated for continuous maximum current. The maximum temperature of the busbars, under operating conditions when carrying rated normal current, shall not exceed 85°C.
1.10.4	Busbars shall be adequately supported on insulators to withstand dynamic stresses due to short circuit current. Busbar support insulators shall conform to the relevant applicable Standard.
1.10.5	Busbars shall not be painted and all performance characteristics specified shall be obtained with unpainted busbar.
1.11	<u>Fuses</u>
	Generally, fuses shall be of HRC cartridge fuse link (Blade contact type), mounted on different sizes of fuse bases required for different sizes of HRC fuses as per requirement under the price schedule having a rupturing capacity of 80kA at 415 V AC, 50Hz.
1.12	<u>Interior Lighting</u>
1.12.1	The Distribution Pillar shall be provided with two 230V, 50 Hz, 40W, incandescent lamp fixtures, placed diagonally opposite each other, internally at the top of the pillar, for interior illumination and controlled by a pressure trip switch and 2A fuse link.
1.12.2	The Distribution Pillar shall be supplied completely wired, ready for the Purchaser's external connections at the terminal blocks. Wiring shall be 650V grade, PVC insulated, 7/20 standard copper wire.
1.13	<u>Labels and Danger Plate</u>
	The Distribution Pillar shall be provided with individual labels with designation or rating. The danger plate, as shown in the drawing, shall be fixed to every pillar door. All labels and plates shall be of corrosion resistant material.
<b>E.</b>	<b>LV &amp; HV ABC ACCESSORIES</b>

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<b>1. POLE ACCESSORIES</b>	
1.1	The following accessories are required for the installation of the LV aerial bundled cables. a) Suspension assembly (including angles up to 30 deg) b) Large angle assembly (angles over 30deg.) c) Dead end assembly. d) End caps
1.2	The following accessories are required for the installation of the HV aerial bundled cables. a) Pole Bracket assembly b) Suspension assembly c) Strain Clamp/Dead end assembly. d) GI Support Hook e) Bundled Restraint assembly f) Jointing Sleeves
1.3	Each assembly shall be delivered complete with all necessary devices suitable for attachment to round steel poles by stainless steel strap. All metal fitting shall be of good quality galvanized mild steel or cast aluminum alloy. Each of the suspension/angle/dead end assemblies shall be supplied with a 1.75m of stainless steel trap with two buckles.
1.4	Bundled end protection shall be provided for protecting cable dead ends and shall comprise a set of heat shrinkable polymeric terminal caps for fitting on each conductor, together with protective black PVC sleeve of 500mm length. A set of terminal caps for an ABC shall comprise 4 caps.
<b>1. LV ABC ACCESSORIES</b>	
<b>1. LV ABC CONNECTORS</b>	
1.1	The following connectors are required for the connection of LV aerial bundled conductors. a) Insulated service/tee-off connection (IPC Connector) b) Insulated tension jointing sleeve c) Insulated connectors between ABC and PVC cables
1.2	Bundled conductor connectors are required for connection of service cables to bundled conductors, for tee-offs of bundled conductors and for connection to PVC cables. The connections shall be insulated and suitable for use on live lines. The teeth of the contact plates shall penetrate the bundled conductor insulation to establish contact with ABC cable without the need to strip the bundled conductor insulation. The connector shall be suitable for copper or aluminum tee-off conductor. Bidder shall describe the method

SECTION IV  
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	used to ensure that the contact plates make adequate contact with the main conductor. The Tee-off shall be capable of removal and subsequent re-installation.								
1.3	The range of connector for ABC to ABC and for ABC to service cable shall be as follows;								
	<table> <tr> <th>Main conductor size(mm<sup>2</sup>)</th><th>Tee-off Conductor Size (mm<sup>2</sup>)</th></tr> <tr> <td>120</td><td>95, 50</td></tr> <tr> <td>95</td><td>95, 50, 16, 10, 6, 4</td></tr> <tr> <td>50</td><td>50, 10, 16, 6 &amp; 4</td></tr> </table>	Main conductor size(mm <sup>2</sup> )	Tee-off Conductor Size (mm <sup>2</sup> )	120	95, 50	95	95, 50, 16, 10, 6, 4	50	50, 10, 16, 6 & 4
Main conductor size(mm <sup>2</sup> )	Tee-off Conductor Size (mm <sup>2</sup> )								
120	95, 50								
95	95, 50, 16, 10, 6, 4								
50	50, 10, 16, 6 & 4								
1.4	Insulated tension jointing sleeves shall be provided for the bundled conductors and service cables. These shall be of the compression type, but compression shall not damage or displace the sleeve insulation. The sleeve connectors shall be designed to have the full rate breaking strength of the aluminum or aluminum alloy cable on which they are fitted.								
<b>2.</b>	<b>LV SERVICE DEAD-END CLAMPS</b>								
	An open sided stainless steel wedge clamp or similar dead-end be supplied for dead ending two core service conductor cables at the pole and the consumer premises. The clamp shall be suitable for the LV service cables. Above and shall have a pull out tension of not less than 16 kN.								
<b>2.</b>	<b>HV ABC ACCESSORIES</b>								
<b>1.</b>	<b>HV ABC CONNECTORS</b>								
1.1	The following connectors are required for the connection of HV aerial bundled conductors. <ul style="list-style-type: none"> <li>a) Insulated tension jointing sleeve</li> <li>b) XLPE Cable Termination Push On Type</li> </ul>								
1.2	The connections shall be insulated and suitable for use on live lines. The teeth of the contact plates shall penetrate the bundled conductor insulation to establish contact with ABC cable without the need to strip the bundled conductor insulation. The connector shall be suitable for copper or aluminum tee-off conductor. Bidder shall describe the method used to ensure that the contact plates make adequate contact with the main conductor. The Tee-off shall be capable of removal and subsequent re-installation.								
1.3	Insulated tension jointing sleeves shall be provided for the bundled conductors. These shall be of the compression type, but compression shall not damage or displace the sleeve insulation. The sleeve connectors shall be designed to have the full rate breaking strength of the Aluminium or Aluminium alloy cable on which they are fitted.								
<b>F.</b>	<b>RING MAIN UNIT</b>								

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**1. SF6 INSULATED RING MAIN UNITS TYPE RM6 (3 way)**

Sl.#	DESCRIPTION	Unit	RING MAIN UNITS (SF6 INSULATED)
1	Standard to which switch gear complies IEC/Other		IEC 62271 (IDI)
2	Type of Ring Main Unit (Metalclad/ metal enclosed)	No.	Metal clad
3	Number of phases	Volts	3
4	Service Voltage	Volts	11000
5	Rated Voltage	Hz	17500
6	Rated Frequency	kV	50
7	Rated lightning withstand voltage		95
8	Rated power frequency withstand voltage	kV	38
9	Short time withstand current	kA-3 sec	21
10	Whether RMU is type tested	Yes/No	Yes
11	Rated current		
	Circuit Breaker	Nos	1 (200A)
	Load Break Switch	Nos	2 (630A)
12	No. of breaker operations permissible without requiring Inspection, replacement of contacts and other main parts.		
	At 100% rated current		3000
	At 100% rated breaking current		13 @ 21kA
13	No. of Isolator operations permissible without requiring Inspection, replacement of contacts and other main parts.		
	At 100% rated current		100
	At 100% rated breaking current (Making)		10
14	Type of relay provided		2 O/C+1 E/F Static self powered type VIP 35
15	Ratio of CT		200-100/1 Amps for line & 50-25/1 amps for transformer
16	Type of material used for tank		stainless steel
17	Degree Protection		
	Enclosure		IP2X
	Tank		IP67
18	Pressure tests on equipment tanks or containers bar (g)		1.7+/-10%



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19	Whether facility is provided for pressure relief Yes/No		Yes
20	Nominal operating gas pressure Bar (gauge)		0.2
21	Gas leakage rate/annum		<0.1%
22	Whether facilities are provided for gas monitoring		Gauge! Manometer
23	Number of separate gas enclosures		ONE
24	Final Paint Shade		Light Cream (Shade 9002)
25	Whether facility is provided for cable testing Ring Switch & CB Yes/No		YES
26	Classification of gas filled compartment as per IEC 298 (control/ closed sealed pressure system)		SEALED
27	Type of Mechanism		Motorized
28	Accessories provided		
	Neon cable indicator on CB & Ring switch		Yes
	Trip PB on CB		Yes
	Operating handle for RMU		Yes
	Motor (48V DC)		Yes
	Shunt trip coil (48V DC)		Yes
29	Type of fault passage indicator with Lithium battery, Flasher & associated CTS_ (FPI does not require separate AC supply)		FLAIR212
30	Weight of RMU - 3 way		
31	Main bus size		Dia 22, 380 Sq.mm.
	Earth bus size		32x6mm2
32	Cable Termination		
	Cable access		Front
	Type of Bushing		Bolted_ M 16 nut & bimetallic washer to be used
	Type of Cable termination used		Raychem/M-seal

<b>2. SF6 INSULATED RING MAIN UNITS TYPE RM6 (4 way)</b>			
Sl.#	DESCRIPTION	Unit	RING MAIN UNITS (SF6 INSULATED)
1	Standard to which switch gear complies IEC/Other		IEC 62271 (IIDI)
2	Type of Ring Main Unit (Metalclad/ metal enclosed)	No.	Metal clad
3	Number of phases	Volts	3

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4	Service Voltage	Volts	11000
5	Rated Voltage	Hz	17500
6	Rated Frequency	kV	50
7	Rated lightning withstand voltage		95
8	Rated power frequency withstand voltage	kV	38
9	Short time withstand current	kA-3 sec	21
10	Whether RMU is type tested	Yes/No	Yes
11	Rated current		
	Circuit Breaker	Nos	1 (200A)
	Load Break Switch	Nos	3 (630A)
12	No. of breaker operations permissible without requiring Inspection, replacement of contacts and other main parts.		
	At 100% rated current		3000
	At 100% rated breaking current		13 @ 21kA
13	No. of Isolator operations permissible without requiring Inspection, replacement of contacts and other main parts.		
	At 100% rated current		100
	At 100% rated breaking current (Making)		10
14	Type of relay provided		2 O/C+1 E/F Static self powered type VIP 35
15	Ratio of CT		200-100/1 Amps for line & 50-25/1 amps for transformer
16	Type of material used for tank		stainless steel
17	Degree Protection		
	Enclosure		IP2X
	Tank		IP67
18	Pressure tests on equipment tanks or containers bar (g)		1.7+-10%
19	Whether facility is provided for pressure relief	Yes/No	Yes
20	Nominal operating gas pressure Bar (gauge)		0.2
21	Gas leakage rate/annum		<0.1%
22	Whether facilities are provided for gas monitoring		Gauge/Manometer
23	Number of separate gas enclosures		ONE

[illegible]

## SECTION IV TECHNICAL SPECIFICATIONS

<b>1.</b>	<b>GENERAL SPECIFICATIONS</b>
<b>1.</b>	<b>SCOPE</b>
	This Specification covers the design, manufacture, testing and inspection, packing, shipping, delivery, and performance requirements of Insulators, for use in the networks of Bhutan for Operation and Maintenance Lines.
	Any departure from the provisions of this Specification shall be disclosed in the Schedule of Non-Compliance in this document.
	This section covers the design, manufacture, testing, and delivery to site of porcelain insulators and fittings as follows:
	a) String Insulators (90 KN)
	b) 11 kV Pin Insulators
<b>2.</b>	<b>STANDARDS</b>
	Except where otherwise specified or implied the Contract Works shall comply with the latest applicable technical standards published by the International Electro-Technical Commission (IEC), International Standards Organisation (ISO), the British Standards Institution (BS) or Verband Deutscher Elektrotechniker (VDE). Except as modified herein, all insulators shall comply in all respects, including amendments and additions issued prior to the date of tendering, with the following Standards:
	The equipment supplied under this section shall conform to the latest edition of the following Standards:
	<ul style="list-style-type: none"> <li>• IEC 60120 Dimensions of ball and socket couplings of string insulators units</li> <li>• IEC 60305 Insulators for overhead lines with a nominal voltage above 1000 volts – Ceramic or glass insulator units for a.c. systems - Characteristics of string insulator units of the cap and pin type</li> <li>• IEC 60372 Locking devices for ball and socket couplings of string insulator units - Dimensions and tests.</li> <li>• IEC 60383 Insulators for overhead lines with a nominal voltage above 1000 volts</li> <li>• IEC 60575 Thermal-mechanical performance test and mechanical performance test on string insulator units</li> <li>• CISPR 18 Radio Interference characteristics of overhead lines and high-voltage equipment</li> </ul>

## SECTION IV TECHNICAL SPECIFICATIONS

	<ul style="list-style-type: none"> <li>• IEC 60060 High Voltage Test Techniques</li> <li>• IEC 60437 Radio Interference test on high voltage insulators</li> <li>• IEC 61211 Insulator of ceramic material of glass for overhead lines with a nominal voltage greater than 1000 V – Impulse puncture testing in air</li> <li>• IEC 60507 Artificial pollution tests on high voltage insulators to be used in a.c. systems</li> <li>• IEC 60797 Residual strength of string insulator units of glass or ceramic material for overhead lines after mechanical damage of the dielectric</li> <li>• ANSI C29.6 Wet process porcelain insulators (high voltage pin type)</li> <li>• ANSI C29.4 Wet process porcelain insulators (strain type)</li> </ul>
	The Bidder may however submit for approval equipment or materials conforming to technically equivalent National Standards of the country of origin, provided such Standards compare favorably with those of the IEC or BS. In this case, copies of the relevant Standards or part thereof, in the English language shall be submitted with the Bid.
<b>3.</b>	<b>INSPECTION and TESTING</b>
	Insulators shall be tested in accordance with the IEC / ANSI standards as appropriate with the type of insulators.
<b>4.</b>	<b>QUALITY ASSURANCE</b>
	The manufacturer must operate a quality assurance system that complies with ISO 9000. The Supplier shall provide current certification showing the manufacturers' compliance with ISO 9000 or equivalent national standard. The certificate must be issued by an independent, accredited issuing authority.
<b>5.</b>	<b>PRODUCTION and DELIVERY PROGRAMME</b>
	Compliance with the agreed Delivery Schedule is a requirement of the Contract.
	The Supplier shall submit a detailed programme covering the manufacture, testing and delivery of the materials and equipment within the time stated in the bid documents
	The programme shall be in the form of a bar chart. The Supplier shall submit progress reports detailing progress against this programme and explaining any variations. The progress reports shall be submitted at the frequency stated in this Specification.

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	The Contractor shall state his guaranteed deliveries in the Schedule.
<b>6.</b>	<b>PERFORMANCE GUARANTEE</b>
	Tests to establish whether the performance guarantees in the Schedules have been met, shall be carried out by the Contractor in accordance with the Contract.
<b>2.</b>	<b>TECHNICAL SPECIFICATIONS</b>
<b>1.</b>	<b>GENERAL</b>
	This specification represents the minimum requirements for the works. The Supplier shall provide equipment, which meets or exceeds these minimum requirements.
	These items are being sought as additions to existing networks; it is essential to maintain compatibility with existing hardware and line design, as well as with established local work practices and methods.
<b>2.</b>	<b>TESTS and TEST CERTIFICATES</b>
	Tests shall be carried out on random insulators taken from batches offered for inspection. The number of samples shall be selected as per IEC 383 with a minimum of five units. The samples shall be subjected to the following tests after having been subjected to routine tests in the same order:
	a) Verification of dimensions
	b) Temperature cycle test
	c) Electro-mechanical or mechanical failing load test in accordance with the type of insulator, including thermal-mechanical performance test to IEC 575.
	d) Puncture test
	e) Porosity test
	f) Galvanizing test
	In the event of one unit failing to pass any of the sample tests, a further quantity, double that of the first quantity shall be subject to retesting. In the event of two or more insulators or metal parts failing to pass any of the sample tests, or if any failure occurs on insulators or metal part subject to retesting, the complete batch will be rejected.
<b>3.</b>	<b>TYPE TESTS</b>
	Bidders shall include with their offers type test certificates, including thermal, mechanical performance carried out in accordance with IEC575, which are issued by an approved, internationally acknowledged, reputed, independent testing laboratory. When type tests are called for by the Purchaser, they will comprise the following:

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	a) Dry lightning impulse withstand voltage test																															
	b) Wet power frequency withstand voltage test																															
<b>4.</b>	<b>INSULATOR COMPONENTS</b>																															
	The porcelain shall be free from defects, thoroughly vitrified and smoothly glazed. Insulators shall have compression type glaze with a good lustre and a uniform brown colour.																															
	Under-surfaces and grooves shall be shaped for easy cleaning. Shells shall be substantially symmetrical in shape without appreciable warping. The wire grooves of pin insulators shall be formed to provide a firm support for the conductor and shall permit the making of a secure tie.																															
	Insulators shall be designed to avoid excessive concentration of electrical stresses in any section or across leakage surfaces. Design features which increase radio influence level shall be avoided.																															
	All metal parts shall be made of good commercial grade malleable iron or open hearth or electric furnace steel, hot dip galvanised conforming to relevant standards.																															
	Each insulator shall have identification markings as per relevant Standards.																															
<b>5.</b>	<b>PIN INSULATOR</b>																															
	Pin insulators shall be manufactured to IEC 383.1 and ANSI C29.6, Class 56.2 and Class 56.4. The insulators shall have necks suitable for fastening conductors with tie wire or preformed fitting. Conductor sizes up to 150 mm <sup>2</sup> ACSR will be used.																															
	Pin insulator shall have the following minimum characteristics.																															
	<table border="1"> <thead> <tr> <th>Characteristics</th><th>Unit</th><th>11 kV</th></tr> </thead> <tbody> <tr> <td>Designation (ANSI C29.6)</td><td></td><td>Class 56.2</td></tr> <tr> <td>Cantilever strength</td><td>kN</td><td>10.7</td></tr> <tr> <td>Nominal diameter</td><td>mm</td><td>229</td></tr> <tr> <td>Nominal height</td><td>mm</td><td>165</td></tr> <tr> <td>Nominal creepage distance</td><td>mm</td><td>432</td></tr> <tr> <td>Puncture voltage</td><td>kV</td><td>145</td></tr> <tr> <td>Minimum power frequency flashover voltage</td><td>kV</td><td>110</td></tr> <tr> <td>- Dry</td><td></td><td></td></tr> <tr> <td>- Wet</td><td>kV</td><td>70</td></tr> </tbody> </table>		Characteristics	Unit	11 kV	Designation (ANSI C29.6)		Class 56.2	Cantilever strength	kN	10.7	Nominal diameter	mm	229	Nominal height	mm	165	Nominal creepage distance	mm	432	Puncture voltage	kV	145	Minimum power frequency flashover voltage	kV	110	- Dry			- Wet	kV	70
Characteristics	Unit	11 kV																														
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- Dry																																
- Wet	kV	70																														
	Each pin insulator shall be supplied complete with a hot dip galvanised forged steel pin.																															

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TECHNICAL SPECIFICATIONS

complete with nut, lock nut and spring washer. The ultimate mechanical strength of the pin insulator assembly shall be equal to the above cantilever strength.

Pin insulators shall be supplied with pins to fit in the cross-arms, drilled with holes of 26 mm diameter.

**6. STRING INSULATOR**

The string (tension disc) insulators shall be the ball and socket type conforming to IEC 305 and IEC 120. Each disc of the string insulators shall have the following minimum characteristics.

Characteristics	Unit	
Mechanical failing load	kN	90
Nominal diameter	mm	225
Nominal spacing	mm	145
Nominal creepage distance	mm	432
Puncture voltage	kV	130
Minimum power frequency flashover voltage		
- Dry	kV	95
- Wet	kV	55

Each string assembly shall consist of one (for 11 kV) tension disc insulators, ball and socket couplings (20 mm), and a socket clevis thimble.

The locking devices for the ball and socket couplings shall comply with IEC 372 recommendations.

The clip shall be W-type and of phosphor bronze material. Retaining pins or locking devices for the insulator units shall be of phosphor bronze, supplied in the hard condition. The pins and locking devices shall be such that, when set under any condition of handling or service, nothing but extreme deformation shall allow separation of the insulator units or fittings or shall cause any risk of any retaining pins or locking devices being accidentally displaced.

**H. 33kV ARCB**



## SECTION IV TECHNICAL SPECIFICATIONS

<b>1. SCOPE</b>																																			
	This specification covers requirements for outdoor Pole-mounted auto-reclosers / circuit Breakers that have programmable protection features and integrated remote operation capability and that are intended for source and down-line duty on rural distribution networks at nominal A.C. voltages of 33 kV. A primary objective of this specification is to foster modularity and a maximum level of interchange ability and integration to a central SCADA system by supporting IEC60870-5-101 or DNP3 communications protocols.																																		
<b>2. STANDARDS</b>																																			
	The following standards contain provisions that, through reference in the text, constitute requirements of this specification at the time of publication the revisions indicated were valid. All standards are subject to review and parties to purchasing agreements based on this specification are encouraged to investigate the possibility of applying the most recent revisions of the standards listed below.																																		
	ANSI/IEEE C37.60-1981:	Requirements for overhead, pad mounted, dry vault, and submersible automatic circuit reclosers and fault interrupters for AC systems (RI993)																																	
	IEC 60255	Electrical relays																																	
	IEC 60056:1987	High-voltage alternating-current circuit breakers. Amendment No. 1:1 992.																																	
	IEC 60529:1989	Degrees of protection provided by enclosures (IP Code).																																	
	UNIPED NORM (SPEC) 13 (1995)	Automation and Control Apparatus for Generating Stations and Substations: Electromagnetic Compatibility Immunity Requirements.																																	
<b>3. GENERAL</b>																																			
	The AR shall be suitable for use on non-effectively earthed and effectively earthed networks and under the system conditions and service conditions as follows:																																		
	<table><tr><td>Nominal system voltage (U) (r.m.s.)</td><td>-</td><td>33 kV;</td></tr><tr><td>Load current</td><td>-</td><td>630 A;</td></tr><tr><td>Emergency load current (8 hours)</td><td>-</td><td>850 A;</td></tr><tr><td>Short circuit-breaking capacity-</td><td>-</td><td>12.5 kA;</td></tr><tr><td>Lightning Impulse Withstand Voltage (BIL)</td><td>-</td><td>170 kV</td></tr><tr><td>System frequency</td><td>-</td><td>50 Hz;</td></tr><tr><td>Number of phases</td><td>-</td><td>3;</td></tr><tr><td>Interrupting medium</td><td>-</td><td>Vacuum</td></tr><tr><td>Insulation medium</td><td>-</td><td>SF6</td></tr><tr><td>Minimal number of rated load operations</td><td>-</td><td>10000</td></tr><tr><td>Closing Mechanism</td><td>-</td><td>LV Solenoid</td></tr></table>		Nominal system voltage (U) (r.m.s.)	-	33 kV;	Load current	-	630 A;	Emergency load current (8 hours)	-	850 A;	Short circuit-breaking capacity-	-	12.5 kA;	Lightning Impulse Withstand Voltage (BIL)	-	170 kV	System frequency	-	50 Hz;	Number of phases	-	3;	Interrupting medium	-	Vacuum	Insulation medium	-	SF6	Minimal number of rated load operations	-	10000	Closing Mechanism	-	LV Solenoid
Nominal system voltage (U) (r.m.s.)	-	33 kV;																																	
Load current	-	630 A;																																	
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	Opening Mechanism	-	LV Solenoid & Springs
	Altitude (For altitudes above 1000m derate in accordance with ANSI C37.60)	-	up to 3000 m;
	Ambient temperature	minimum	-10 °C;
		maximum	50 °C;
	Maximum daily variation	-	25 °C;
	Pollution level	-	medium (special applications);
	Lightning activity	-	high.
<b>4.</b>	<b>MOUNTING</b>		
	<p>The Auto Reclosure (AR) shall be suitable for single pole mounting. Adequately rated lifting eyes shall be provided and they shall be designed to allow the completely assembled AR (surge arresters fitted) to be lifted without recourse to a sling spreader. The diameter of the eyes shall be a minimum of 30mm. Suitable mounting brackets for surge arresters shall be provided on the line side and on the load side of the AR, adjacent to the bushings. The AR shall be fitted with an external M12 earthing stud, complete with a nut, lock nut and spring washer. The earth stud shall be welded to the tank for optimal earthing connection. The AR shall have laser cut markings on each bushing marked R1 Y1 B1 for the normal line side and R2 Y2 B2 for normal load side. A detailed drawing of the single pole AR mounting arrangement with surge arresters fitted shall be provided. The minimum phase-to-earth clearances shall be indicated on the drawing. The mass of the mounting hardware, the AR and the control cabinet and cable shall be stated in the tender documentation.</p>		
<b>5.</b>	<b>BUSHING</b>		
<b>5.1</b>	<b><u>Terminals</u></b>		
	<p>The preferred arrangement for termination is an insulated bushing arrangement achieved by using epoxy resins bushings and silicone rubber bushing boots together with 3 meters 150 sq.mm XLPE insulated water blocked cable tails.</p>		
<b>5.2</b>	<b><u>Materials</u></b>		
	<p>The following bushing materials are acceptable:</p> <ul style="list-style-type: none"> <li>• Aromatic epoxy resin with Silicone rubber boots</li> </ul> <p>Porcelain bushings and EPDM rubber are not acceptable. Minimum creepage distance should be 1100 mm.</p>		
<b>5.3</b>	<b><u>Finish</u></b>		

## SECTION IV TECHNICAL SPECIFICATIONS

	All interior and exterior ferrous surfaces of auto-reclosers and control cabinets shall be manufactured from 316 marine grade stainless steel. All support structures and associated bolts and nuts with these parts, shall be hot-dip galvanized. Suitable precautions shall be implemented to prevent corrosion due to the use of dissimilar materials. Preference will be given to the product made from 316 marine grade stainless steel.
<b>6.</b>	<b>CONTROL EQUIPMENT</b>
<b>6.1</b>	<u>Control Cabinet</u>
	Cabinets that house equipment for protection and control shall be mounted independently of the AR. Suitable ultraviolet-resistant cable, 10 m long, shall be provided to connect the AR to the control cabinet. It shall be possible to disconnect the cable at the AR while the AR is connected to the power system, without causing damage or malfunction: care shall be taken that CTs are not open circuited. A robust, multipoint weatherproof connector shall be supplied. The female part of the connector shall be mounted on the AR and the male part shall be mounted on the cable. Preference will be given to products supplying connectors at both the AR and the control cabinet. Cabinets shall be adequately sealed and dust protected and shall be internally treated to prevent moisture condensation. The degree of protection shall be suitable for purpose. The supplier shall ensure that the equipment housed in the control cabinet can withstand the heating effect of direct solar radiation without causing failure and/or malfunction. Details shall be provided in the tender documentation. The cabinet shall make provision for bottom entry of three cables. This shall be done with a pre-punched with two 21 mm and one 32 mm diameter holes. The holes shall be suitably blanked off. The cabinet shall be fitted with an external M10 earthing stud with a nut, lock nut and a serrated washer. The door of the cabinet shall be fitted with a robust fastening arrangement that is capable of being secured by a padlock that has a shackle of 8 mm diameter. The cabinet shall be easily removable for workshop repair purposes.
<b>6.2</b>	<u>Electronic Control Equipment</u>
	The controls shall not suffer any damage if one or more poles of the circuit breaker fail to respond to either a trip or a close command. Electronic modules shall perform continuous diagnostic monitoring and shall contain hardware and software watchdog checking.
<b>7.</b>	<b>PROTECTION CHARACTERISTICS</b>
<b>7.1</b>	<u>General</u>
	The ratio of drop-off current to pick-up current shall be at least 90% for all protection functions. The SEF function shall be equipped with harmonic filtering to prevent operation when harmonics are present in the primary residual earth currents. A low pass filter with 3rd harmonic rejection > 28dB shall be supplied. Both the SEF function and

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	its filter shall be described in the tender documentation. All protection functions, i.e. over-current (O/C), earth fault (E/F) and sensitive earth fault (SEF) shall have elements with characteristics that comply with IEC 60255.
	The sequence of trip and auto-reclose characteristics for O/C, E/F and SEF shall be programmable to enable:
	<ul style="list-style-type: none"> <li>the selection of any combination of the available elements for each trip in the trip-and-reclose sequence; and</li> <li>Separate trip-and-reclose sequences for O/C, E/F and SEF with the same number of reclosing intervals for O/C and E/F.</li> </ul>
	In case of IDMTL protection elements the AR shall preferably be provided with a disc reset timer that simulates the resetting functionality of an upstream electromechanical induction disc relay by implementing a disc reset timer. The length of the time delay shall preferably be settable to be able to simulate the upstream device (settable between 5s and 20 s), however, if a fixed time delay is provided it should be between 4s and 5s. A Sequence co-ordination feature shall be provided to ensure trip-close sequence co-ordination for combinations of rapid and delayed protection operations applied to ARs in series. The Sequence co-ordination functionality shall be such that:
	<ul style="list-style-type: none"> <li>an AR senses the presence of an over-current or earth fault, as well as the clearance of that fault by another downstream device and proceeds to the next protection operation in its own sequence; and</li> <li>it proceeds in its sequence of rapid protection operations only, allowing the full number of delayed operations to be executed for in-zone conditions.</li> </ul>
	Loss of Phase (LOP) protection shall be provided to ensure the protection functionality of AR as below:
	<ul style="list-style-type: none"> <li>AR should trip with no auto-reclose if there is a loss of voltage on one or two phases on the upstream part of the line. Loss of supply on all three phases shall not generate the protection trip.</li> <li>Facility to turn LOP ON or OFF without affecting other protection functions of the device. Password or other form of access control shall be provided</li> <li>The parameters of configuration of LOP shall include the voltage level (phase to ground) and time of loss of supply on one or two phases. The voltage level shall be configurable from 5000 to 10000 Volts with steps not greater than 250 V. Time range shall be configurable from 1 to 60 sec with steps not greater than 1 sec.</li> <li>The information about LOP operation in case of the protection trip shall be recorded accordingly with indication of the phase(s) causing the trip of AR. The information about LOP operation shall be easily assessable.</li> </ul>
	Directional Blocking shall be provided to ensure the protection functionality of AR as specified below:
	<ul style="list-style-type: none"> <li>AR and Control Element shall be capable to detect the direction of the fault current. Minimum time to determinate fault direction for O/C and E/F shall be</li> </ul>

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	<p>not greater than 50 msec. For Sensitive Earth Fault (SEF) the time to determinate the fault direction shall not be greater than 1 sec.</p> <ul style="list-style-type: none"> <li>• Configuration for Directional Blocking shall include the separate settings for Characteristic Angle for O/C and E/F elements. The range for setting of characteristic Angle shall be from -180 Deg to 180 Deg with the step not greater than 5 Deg.</li> <li>• The Directional Blocking shall have the facilities to configure AR to trip or block for upstream and downstream faults. This shall be configured separately for O/C, E/F and SEF.</li> <li>• The information about Directional Blocking operation in case of the protection trip shall be recorded accordingly in history.</li> </ul>
	<p>The AR and Control element shall support multiple protection groups and this shall meet the requirements specified below:</p> <ul style="list-style-type: none"> <li>• The AR shall have minimum 4 independent protection groups. The Protection Groups shall have clear indication and shall be marked as "I, II, III, IV" or "A, B, C, D"</li> <li>• Each protection group shall have the facility to configure O/C, E/F and SEF trip current and specify the number of the protection trips independently from others. The protection functions and parameters used in one of the protection groups shall be available for use in any or all of the other protection groups.</li> <li>• Changes to any of the protection parameter to any of the not active protection group shall not affect the protection functionality of the active protection group.</li> <li>• Information about activation of any of the protection group shall be recorded in history and shall be easily assessable. Information about protection trip shall clearly indicate the protection group, active at the time of fault.</li> <li>• AR and Control element shall have the facility for Automatic protection group selection. Automatic Protection Group Selection shall have the facility to be turned ON or OFF with password protection or other form of access control.</li> </ul>
7.2	<b>Over-Current Function</b>
	<p>Delayed protection operation shall be possible by selecting an IDMTL protection element with normal inverse (NI), very inverse (VI) or extremely inverse (EI) curves. Provision shall also be made for customised protection curves. Both the process and software tools required creating these protection curves should be described in the tender documentation. The over-current pick-up setting range shall be selectable from 10 A to 1260 A in the steps not greater than 10 A. Rapid protection operation shall be possible by selecting a fast curve or instantaneous protection element. Co-ordination of the fast curves or instantaneous protection elements between two devices in series shall be possible either by selecting suitable curves from a family or by addition of a selectable time increment, typically 0,05s to 3s, in 0,05s steps, or any other acceptable solution. Long protection operating times associated with fault levels marginally above the pick-up setting of the IDMTL protection element shall be avoided by the provision of a Low Set Definite Time element with the following features:</p> <ul style="list-style-type: none"> <li>• It shall be possible to enable or disable the element. When enabled it shall be</li> </ul>

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	<p>active simultaneously as an overlay with all selected elements;</p> <ul style="list-style-type: none"> <li>the element shall have the same pick-up current setting as the IDMTL element; and</li> <li>the time delay shall be selectable from 2s to 10s, in 1s steps. The time delay shall be independent of any curve manipulation.</li> </ul>
	A High Set Instantaneous element with a selectable time delay shall be provided, with the following features:
	<ul style="list-style-type: none"> <li>it shall be possible to enable or disable the element. When enabled it shall be active simultaneously as an overlay with all selected elements;</li> <li>circuit-breaker lock-out as a result of an operation due to the High Set Instantaneous element shall be selectable;</li> <li>the pick-up setting range of this element shall be at least 100% to 1500% of the over-current setting and shall be independent of any curve manipulation; and</li> <li>the time delay shall be selectable from instantaneous to 1s, in 0,05 s steps. The time delay shall be independent of any curve manipulation.</li> </ul>
	A cold load pick-up (CLP) feature shall be provided that allows user selectable modification of protection element characteristics under conditions of system power restoration. The CLP function may be provided in one of the following two ways:
	<ul style="list-style-type: none"> <li>The instantaneous O/C element and the Low Set Definite Time O/C element could be blocked for the CLP time duration; and</li> <li>The pick-up current setting of the IDMTL O/C element and the Low Set Definite Time O/C element may be modified with a settable factor to increase the pick-up current of these elements for the CLP duration. The instantaneous O/C element should be blocked for this time. This is the preferred method.</li> </ul>
	The CLP function shall have the following characteristics:
	<ul style="list-style-type: none"> <li>the CLP function shall not in any way interfere with any of the other functions'/elements' pick-up current settings except as mentioned above;</li> <li>the CLP functionality shall be such that the active duration of the CLP is selectable from 0 min to 200 min in 1 min steps; and</li> <li>the modification factor should be settable from 1 to 5 in steps of 0,1.</li> </ul>
7.3	<u>Earth Fault Function</u>
	The earth fault setting range shall detect primary earth fault currents down to 20 A. Delayed protection operation shall be possible by selecting an IDMTL element with NI, VI or EI curve, or a definite time protection element with time delay from 0.5s to 100s in 0.1s steps. Rapid protection operation shall be possible by selecting a fast curve or instantaneous protection element. Co-ordination of the fast curves or instantaneous protection elements between two devices in series shall be possible either by selecting suitable curves from a family or by addition of a selectable time increment, typically 0.05s to 3s, in 0.05s steps, or any other acceptable solution. A High Set Instantaneous element with a selectable time delay shall be provided with the following features:

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	<ul style="list-style-type: none"> <li>it shall be possible to enable or disable the element. When enabled it shall be active simultaneously as an overlay with all selected elements;</li> <li>circuit-breaker lockout as a result of an operation due to the High Set Instantaneous element shall be selectable;</li> <li>the pick-up setting range of this element shall be at least 100% to 1500% of the earth fault setting and shall be independent of any curve manipulation; and</li> <li>the time delay shall be selectable from 0,05s to 1s, in 05s steps. The time delay shall be independent of any curve manipulation.</li> </ul>
7.4	<u>Sensitive Earth Fault (SEF) Function</u>
	A primary earth fault current of 4A to 20A in steps not exceeding 1A shall be detectable. Delayed protection operation shall be possible by selecting a definite time protection element with time delay from 3s to 25s, in 1s steps.
7.5	<u>Auto-Reclose Operation Parameters</u>
	The number of sequential trips to reach lockout shall be selectable to be 1, 2, 3 or 4. Reset times shall ideally be separately selectable for SEF and the combination of over-current and earth fault functions. The reset time shall be selectable from 5s to 120s in 1s steps. Dead times shall ideally be selectable for SEF and the combination of over-current and earth fault functions. The dead time between each successive reclosure shall be independently selectable from instantaneous to 5s for the first reclosure and from a minimum of 2s up to a maximum of 120s for subsequent reclosures. A close instruction initiated locally or remotely during a dead time shall result in lockout if the fault is still present upon closure.
7.6	<u>Over/Under Frequency Protection</u>
	The over frequency protection function shall detect frequencies above the normal system frequency. An over frequency trip setting up to 5Hz, in steps of 0.1Hz, above the system frequency shall be detectable. The number of continuous cycles at and above the Over Frequency threshold before a trip will occur must be selectable from 2 to 1000 cycles. Under frequency protection settings shall be separate to the over frequency setting. The setting range down to 5Hz, in steps of 0.1Hz, below the system frequency shall be provided. The number of continuous cycles at and below the Under Frequency threshold before a trip will occur must be selectable from 2 to 1000 cycles. It shall be possible to separately enable / disable the Over and Under Frequency protection functions. An Auto close function shall be provided to enable the AR to close once the frequency returns to normal.
7.7	<u>Over/Under Voltage Protection</u>
	The over voltage protection function shall detect voltages above the normal system voltage. An over voltage trip setting of 100% up to 150%, in steps of 1%, above the nominal system voltage shall be detectable. The time delay at and above the Over



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	voltage threshold before a trip will occur must be selectable from 0s to 60s, in steps of 0.1s. Under voltage protection settings shall be separate to the over voltage setting. The setting range of 50% to 100%, in steps of 1%, below the nominal system voltage shall be provided. The time delay at and below the under voltage threshold before a trip will occur must be selectable from 0s to 60s, in steps of 0.1s. It shall be possible to separately enable / disable the Over and Under Voltage protection functions. An Auto close function shall be provided to enable the AR to close once the voltage returns to normal.		
7.8	<u>Statistical Measurement Function</u>		
	The characteristics of the statistical measurement functions and measurement shall be done with one of the following methods:		
	<ul style="list-style-type: none"> <li>• three-phase-3-wire method; and</li> <li>• or the three-phase-4-wire method</li> </ul>		
7.9	<u>Quantities to be measured/calculated with specified accuracy</u>		
	<ul style="list-style-type: none"> <li>• r.m.s. phase-to-phase and phase-to-ground voltage of all three phases (% of rated voltage): <math>\pm 2.5\%</math>;</li> <li>• r.m.s current per phase(within rated current range) <math>\pm 2.5\%</math>;</li> <li>• three phase active power in kW: <math>\pm 5\%</math>;</li> <li>• three phase reactive power in kVARs: <math>\pm 5\%</math>;</li> <li>• total three-phase active energy in kWh: <math>\pm 5\%</math>;</li> <li>• Power factor: <math>\pm 5\%</math>;</li> <li>• Maximum demand: <math>\pm 5\%</math>.</li> </ul>		
	The real power energy and maximum demand measurement shall be integrated with respect to time. Energy values shall be calculated with selectable time integration periods of 5 min, 15 min, 30 min or 60 min. The data buffer shall work on the FIFO principle and a minimum size for the data buffer shall store values for 4 months on the 30 minutes integration period. The voltage factor of the voltage transformers shall be a minimum of 1.9. AR and Control element shall have the facilities to record the cumulative number and duration of outages. The information shall be assessable locally or remotely using a SCADA system. The following parameters shall be recorded:		
	<ul style="list-style-type: none"> <li>• Cumulative total number of outages;</li> <li>• Cumulative total outage duration; and</li> <li>• Time and duration of each outage in the form of an event log.</li> </ul>		
7.10	<u>Local Control and Indications</u>		
	The local control and indication shall be as given below. (minimum specification of local controls and indications)		
	<b>1 - Item</b>	<b>2 - Features</b>	<b>3 - Remarks</b>



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	Local control	Local/Remote	2 position key switchable
	(See Note 1)	Circuit-breaker open Circuit-breaker close AR ON/OFF SEF ON/OFF	(See Note 3) Secure control Secure control Secure or Toggled control Secure or Toggled control
	Local indication	Local/Remote	(See Note 3)
	(See Note 1)	Circuit-breaker open Circuit-breaker closed Circuit-breaker lockout AR ON/OFF SEF ON/OFF	
		Protection operation	See 0
		Controller not healthy	(See Note 2)
		SF6 Alarm	See 0
		AC fail	
		DC abnormal	0
		DC fail	
		Charger fail	
	Local Analog indication (See Note 1)	<ul style="list-style-type: none"> <li>r.m.s. phase-to-phase and phase to ground voltage of all three phases</li> <li>r.m.s current per phase</li> <li>three-phase active power in kW three-phase reactive power in kVARs</li> <li>total three-phase active energy in kWh</li> <li>Power factor</li> <li>Maximum demand</li> </ul>	
<b>Notes (preferable)</b>			
	<p>Note 1: The local control and the local indication features on the control panel shall be labeled as presented in column 2, where applicable. The type of switch used for local control shall not allow for a conflict to exist between the switch position and the function status.</p> <p>Note 2: The 'Controller not healthy' indication shall indicate the control equipment not healthy (watchdog) function operated. It shall not operate during the normal pole-mounted switch operating cycle. This indication should remain active until the unhealthy state that initiated it returns to normal.</p>		

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	Note 3: The two-position switch (labeled as below) shall allow the AR controller to be set in the following modes:										
	<i>Remote:</i> In this mode a local operator can trip the AR and change the mode. A remote operator can trip or close the AR.										
	<i>Local:</i> In this mode a local operator can trip and close the AR. A remote operator can only trip the AR.										
	All local controls and indications shall be accessible in adverse weather condition. The AR shall be provided with external levers to permit manual operation, using an insulated operating stick, to open, close, lock-out and reset the AR from ground level. Where these operations can be performed at the control cabinet, it shall only be necessary to provide a mechanical means to open and lockout the circuit breaker using an insulated operating stick. The AR status shall be clearly visible from ground level. "Opened" shall be indicated with a green "O". A red "I" shall indicate "Closed". Alternative indications shall be subject to approval by the purchaser. Pressure relief facilities shall be provided to enable the AR to withstand safely the effects of excessive pressure rise due to an internal fault. Malfunction of the AR shall not pose a safety hazard to the operator due to the recoil or backlash of items such as external operating rods, cranks and levers. Easily available (i.e. maximum of one keystroke) local indication of protection operation shall be provided for at least the last operation of the AR. The function, phase involved and the current magnitude shall be indicated. Switches used for local control shall offer the type of control described in table 1 i.e. secure or toggled control. Electronic keypad controls shall offer 'quick key' (maximum of one keystroke) access to the controls in <b>Error! Reference source not found.</b> if not implemented with switches.										
	ARs using SF6 as an arc extinguishing medium shall:										
	<ul style="list-style-type: none"><li>• Provide a low gas pressure indication at a gas pressure that enables safe operation of the AR;</li><li>• Prevent closing of the AR after it has opened under the above-described condition;</li><li>• Be provided with a method of inhibiting any operation of the AR in the event of the gas pressure dropping below a safe pressure.</li></ul>										
7.11	<u>Remote Control and Indication</u>										
	The remote controls and indications shall be as given in Table 1.										
	Table 1: Minimum specification of remote controls and indications										
	<table><tr><td>Item</td><td>Features</td><td>Remarks</td></tr><tr><td rowspan="2">Remote control</td><td>Circuit-breaker open</td><td>Secure control</td></tr><tr><td>Circuit-breaker close</td><td>Secure control</td></tr></table>			Item	Features	Remarks	Remote control	Circuit-breaker open	Secure control	Circuit-breaker close	Secure control
Item	Features	Remarks									
Remote control	Circuit-breaker open	Secure control									
	Circuit-breaker close	Secure control									

[illegible]

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<b>Notes (Preferable)</b>		
	Note 4:	The 'Controller not healthy' indication shall indicate the control equipment not healthy (watchdog) function operated. It shall not operate during the normal pole-mounted switch operating cycle. This indication should remain active until the unhealthy state that initiated it returns to normal.
	Note 5:	The two-position switch (labeled as below) shall allow the AR controller to be set in the following modes: <i>Remote:</i> In this mode a local operator can trip the AR and change the mode. A remote operator can trip or close the AR. <i>Local:</i> In this mode a local operator can trip and close the AR. A remote operator can only trip the AR.
	Note 6:	The AR indication shall give an alarm with any AR attempt.
7.12	<b>Local Engineering</b>	
	The AR controller shall contain a clock (with leap year support) that can be set both locally and remotely. The accuracy of the clock shall be stated in the tender documentation. A facility for selecting all the protection, operating and communications characteristics shall be locally available in the control cabinet. Optional password protection against unauthorized changes shall be available.	
	Non-volatile memory storage shall be sized to store the following minimum data:	
	All operating, protection and communications parameters. An event record containing at least 3000 events (a protection event is defined as all operations in a sequence until successful sequence reset or lockout). The actual number available shall be stated in the tender documentation. Refer to 0. Maximum demand information. Maximum demand shall have the facilities to be configured for weekly and/or monthly demand. A pointer shall be provided to indicate up to where the data was last read. This will enable regular uploading of the data without re-loading of previously read data. All events shall be time and date stamped with a resolution of at least 10ms relative to the onboard clock.	
<b>8.</b>	<b>TELE-CONTROL EQUIPMENT</b>	
	The AR controller shall detect and report disconnection of the control cable between the controller and AR. It shall be possible to operate AR, change the active protection group, turn Auto-Recloser capabilities ON/OFF and turn E/F and SEF ON/OFF remotely using the protocol specified in 0). This functionality shall be subject to the limitations of the selected protocol. Details shall be provided in the tender documentation.	
<b>9.</b>	<b>COMMUNICATIONS</b>	
	<i>As a minimum, two independent RS-232 communication ports that allow for simultaneous operation shall be provided. These are to be used as follows-</i>	

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	<ul style="list-style-type: none"> <li>To upload the non-volatile data to and from a personal computer. The requirements of the personal computer shall be stated in the tender documentation.</li> <li>To interface to remote communications equipment (e.g. modems, radio-modems)</li> </ul>	
	As a minimum, it shall be possible for these ports to operate at the following speeds: <ul style="list-style-type: none"> <li>1200 bps,</li> <li>2400 bps,</li> <li>9600 bps, and</li> <li>19200 bps</li> </ul>	
	The RS-232 port shall support full asynchronous V23 functionality. The AR controller shall offer a modular modem option with the following minimum characteristics:	
	Operation at 1200 Baud Frequency Shift Keying (FSK) (UTI-T channel frequencies). The modem shall provide radio interface facilities. A four-wire E&M facility shall be provided with the E and M contacts being voltage free. Transmit and receive lines shall be balanced and matched to 600 ohm. Modems offering high impedance outputs as an optional configuration will be preferred.	
	The modem shall interface to a radio and provision shall be made for mounting the radio. Radios may be supplied as an integral component of the AR but may be free issued from other supply contracts.	
	It shall be possible to disconnect the RS-232-to-modem interface to facilitate local protocol and communications troubleshooting. Alternatively, a low-level protocol monitor shall be integrated in the software and accessible via the diagnostic port.	
	The protocol to be supported by the AR controller for remote communications shall be one of the following: <ul style="list-style-type: none"> <li>IEC 60870-5-101 Protocol; and</li> <li>DNP3.0 - 2001 level 2.</li> </ul> Preference will be given to DNP3.	
<b>10. POWER SUPPLIES</b>		
	The AR system shall provide power for the electronics, operation of the AR and operation of the communications equipment (e.g. radio or radio-modem).	
	<b>Primary supply:</b> Preference will be given to the ability to obtain primary power directly from the HV power system requiring no additional primary supply connection.	
	<b>Test supply:</b> The AR shall accept an external AC 230 V 50 Hz supply.	

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		<b>Optional supply:</b> The AR shall accept an external DC 110 V supply.
		<b>Auxiliary supply:</b> An auxiliary supply with the following minimum characteristics shall be provided
		One battery and constant voltage charger with current limiting shall be part of the AR. Battery standby time shall not be less than 24 h, allowing for ten AR operations and a Transmit: Receive: Standby duty cycle of 5:5:90 from a 5 W output radio. The battery shall recharge to 80% of its capacity in a maximum of 15 h. The total number of circuit-breaker operations under the above communications scenario shall be at least 10 AR operations preventing closing if the battery will not have enough stored energy to open the circuit breaker for a protection trip condition. Details will be stated in the tender documentation. Batteries shall be disconnected at the manufacturer's specified minimum voltage. 'Battery Low' indication shall be available locally and remotely and shall include a battery test. The indication of "Battery Low" status shall allow for a further ten AR operations. The minimum battery life expectancy shall be 5 years. Details of the guaranteed life expectancy of the battery shall be stated in the tender documentation.
		<b>11. MAINTENANCE and COMMISSIONING</b>
		All the communications equipment shall be easily accessible in the control cabinet. Wiring of communications links in the control cabinet shall permit the connection of a temporary protocol-Monitor. It shall be possible to perform secondary injection testing while the AR is communicating with the center. It shall be Possible to disconnect the AR circuit breaker and connect a simulated breaker to the control cabinet for testing purposes. The AR shall not malfunction while the radio is transmitting via an antenna in close proximity and the control cabinet door is open. Provision shall be made in the control cabinet for isolating the power supply to/from the following:
		<ul style="list-style-type: none"> <li>• battery;</li> <li>• battery charger;</li> <li>• radio; and</li> <li>• Primary supply to the control cabinet electronics</li> </ul>
		<b>12. RATING PLATE</b>
		Each AR shall bear a rating plate of an intrinsically corrosion-resistant material, indelibly marked with the sea-level rating for which the equipment has been type tested. The rating plate shall be indelibly marked with:
		<ul style="list-style-type: none"> <li>• the manufacturer's name;</li> <li>• the equipment type designation and serial number of the AR;</li> <li>• the mass, in kilograms;</li> <li>• the date of manufacture; and</li> <li>• Auxiliary supply voltage (if applicable)</li> </ul>

SECTION IV  
TECHNICAL SPECIFICATIONS

<b>13. ADDITIONAL INFORMATION</b>	
	The following shall be submitted with the tender.
	<b>Circuit Breaker Details</b>
	<ul style="list-style-type: none"> <li>• manufacturer;</li> <li>• type designation;</li> <li>• place of manufacture;</li> <li>• short circuit breaking capacity; 3s 1s</li> <li>• asymmetrical breaking current;</li> <li>• peak making current; and</li> <li>• Critical current (maximum instantaneous peak)</li> </ul>
	<p>A schematic-wiring diagram of the AR should be provided. A general-arrangement drawing of the AR should be provided. Details of the maintenance and operating equipment, procedures needed and a detailed parts list of the various components.</p> <p>A description of the AR operation, with instruction and maintenance manuals, including maintenance schedules, protection characteristics, communications facilities, the method of applying settings to relays and controls, together with any software required and the cost thereof. The software requirements shall be stated in the tender documentation.</p>
<b>14. SPARES and TOOLS</b>	
	<p>The method of changing protection settings shall be stated in the tender documentation. Details of technical back-up facilities available. These details shall be stated in the tender documentation. Details of the class, ratio(s) and burden of the protection current transformer and voltage transformer, if supplied, shall be stated in the tender documentation. The supplier shall include the following details of measurement current transformers (not internal to the AR) that can be supplied with the AR. The following details shall be provided:</p>
	<ul style="list-style-type: none"> <li>• available ratio(s) and accuracy class;</li> <li>• method of fitting; and</li> <li>• Effect on creepage distance and BIL</li> </ul>
	<p>Where applicable details of the low gas pressure alarm/lock-out philosophy. Details of AR service history:</p> <ul style="list-style-type: none"> <li>• how many in service, where and for what period; and</li> <li>• Contact names and numbers.</li> </ul>
	<p>Details of LV trip/close coil if available as an option</p> <p>Power requirements for a close operation</p> <p>The maximum achievable separation between the control unit and the circuit breaker.</p> <p>Full details of the protocol implementation and the complete point database.</p>

SECTION IV  
TECHNICAL SPECIFICATIONS

<b>15.</b>	<b>TESTS</b>	
15.1	<u>Type Test</u>	
	The AR shall have been type tested in accordance with, and found to comply with, the requirements of either IEC 60056 or ANSI/IEEE C37.60-1981 for the following, and the appropriate values shall be stated in the tender documentation:	
	<ul style="list-style-type: none"> <li>• Interrupting performance (automatic operation).</li> <li>• Interrupting performance (manual operation).</li> <li>• Operating duty.</li> <li>• Making current.</li> <li>• Minimum tripping current.</li> <li>• Insulation (dielectric tests).</li> <li>• Radio interference voltage.</li> <li>• Temperature rise.</li> <li>• Mechanical operations.</li> </ul>	
15.2	<u>Control Equipment Surge Withstand Capability</u>	
	The control cabinet and associated electronics shall have been type tested in accordance with UNIPED NORM (SPEC)13 (1995): Automation and Control Apparatus for Generating Stations and Substations: Electromagnetic Compatibility Immunity Requirements. The environment shall be considered as falling in the HV substation category, according to NORM (SPEC) 13. Test records (on identical equipment) in the form of validated copies of test certificates issued by a recognized testing authority shall be submitted with the tender documentation.	
15.3	<u>Routine Test</u>	
	Routine tests, as required in the relevant standards, shall be carried out as a normal requirement of the contract and, unless otherwise agreed upon, shall be witnessed by the purchaser or by his appointed representative. No additional charge shall be levied for such tests or for the production or presentation of documentation related to routine tests.	
<b>16.</b>	<b>PACKING</b>	
	All equipment shall be carefully packed to prevent damage or deterioration during normal transportation, handling and storage. Each container shall bear the following information on the outside of the container:	
	<ul style="list-style-type: none"> <li>• The address of the destination</li> <li>• The gross mass, in kilograms</li> <li>• The purchaser's order number and port of destination</li> <li>• Documentation</li> </ul>	



SECTION IV  
TECHNICAL SPECIFICATIONS

<b>DEVIATION FROM and EXCEPTION TO BID DOCUMENT</b>		
The Bidder shall specify below, in detail, all deviations from and exceptions to the bid document. Any entry shall be referenced to the Bid document Clause No. To which they refer.		
The Bidder deemed to be compliant with the content and intent of the Bid document except in respect of deviations and exceptions listed in this schedule.		
No deviation from and exception to the Bid Document shall be made subsequently to the Contract without the written approval of the Employer.		
Clause No.	Details of Deviation /Exception	Reasons for Deviation/Exception
Declaration: This page and attached.....Pages of deviations from the Bid Document is a complete record of such deviations.		
In case NO DEVIATION is mentioned here and deviation of clauses/specification is mentioned elsewhere, then it will be taken as a deviation.		
Signature of Bidder.....		
Place and Date.....		

SECTION V  
BID FORM AND PRICE SCHEDULES

SECTION V BID FORM AND PRICE SCHEDULES		
<b>Bid Form</b>		
<p>The Managing Director, Bhutan Power Corporation Limited, Thimphu: Bhutan.</p>		
<p>Sir,</p>		
<p>Having examined the Bidding Documents for the above Contract, including the Specifications, the receipt of which is hereby duly acknowledged, we the undersigned, offer to supply and deliver .....(Description of Goods) in conformity with the said Bidding Documents, including Addenda Nos..... (Insert Numbers), for the sum of..... (Total Bid Amount CIF/CIP in Words and Figures) or such other sums as may be ascertained in accordance with the Price Schedules attached hereto and made part of this Bid.</p>		
<p>We undertake, if our Bid is accepted, to commence delivery within ..... days, and to complete delivery of all the items specified in the Contract within ..... days, calculated from the date of receipt of your Notification of Award and in accordance with the Contract Execution Schedule provided in the Special Conditions of Contract.</p>		
<p>If our Bid is accepted, we will provide the performance security in the sum of ..... (Amount), equal to ten (10) percent of the Contract price, for the due performance of the Contract.</p>		
<p>We agree to abide by this Bid for the period of .....90..... days from the date fixed for bid closing pursuant to Clause 21 of the Instructions to Bidders, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.</p>		
<p>Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof in your Notification of Award, shall constitute a binding contract between us.</p>		
<p>We understand that you are not bound to accept the lowest-priced or any Bid that you may receive.</p>		
<p>Dated this _____ day of _____ 2010</p>		
<p>_____</p>		
<p>(Signature)</p>		

SECTION V  
BID FORM AND PRICE SCHEDULES

_____
(In the Capacity of)
Duly authorized to sign Bid for and on behalf of _____
_____
_____
(Signature of Witness)
Witness _____
Address _____

SECTION V  
BID FORM AND PRICE SCHEDULES

<b>BHUTAN POWER CORPORATION LIMITED</b>						
<b>PROCUREMENT SERVICES DEPARTMENT</b>						
<b>THIMPHU: BHUTAN</b>						
Tender No.:	BPC/PSD-TU/EM/2010/08 dated 30 <sup>th</sup> April 2010					
LOT 1A (STATIC ENERGY METERS)						
Brands restricted to Actaris, Secure Meters, L&T, and EDM I						
<b>Sl. No.</b>	<b>Description</b>	<b>UoM</b>	<b>Quantity</b>	<b>Country of Origin</b>	<b>Unit Price CIF/CIP Port of Entry (Exclusive of BST)</b>	<b>Total Price CIF/CIP Port of Entry</b>
1	Tamper Proof, Whole Current Static Energy Meter, Single Phase, two wire, 10-60 Amps	Nos	14000			
<b>Total Amount</b>						
<p>Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.</p> <p>CIF: BPC Regional Stores Division, Phuentsholing Bhutan.</p> <p>Tender Delivery Period: 120 Days</p> <p>Offered Delivery Period: _____</p> <p>Currency for the Payment: Only in Nu.</p> <p>Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.</p>						

SECTION V  
BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

**LOT 1B (ELECTROMECHANICAL ENERGY METERS)**

Brands restricted to Actaris, Hexing, Holley, Elster, Iskra, Alstom, ABB and Landis+Gyr

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (Exclusive of BST)	Total Price CIF/CIP Port of Entry
1	Three phase Energy meter with CTR X/5A, Class 1	Nos	25			
2	Three Phase Energy Meter (5-30 Amps), Class 2	Nos	688			
3	Three Phase Energy Meter (10-60 Amps), Class 2	Nos	563			
4	Three Phase Energy Meter 200A without CT	Nos	6			
5	Three Phase Energy Meter 100A without CT	Nos	10			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 90 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

SECTION V  
BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

**LOT 1C (HIGH TENSION ELECTRONIC ENERGY METERS)**

Brands restricted to Actaris & Iskrameco

Sl. No.	Description	UoM	Qty	Country of Origin	Unit Price CIF/CIP Port of Entry (Exclusive of BST)	Total Price CIF/CIP Port of Entry
1	Programmable HT Electronic solid state bidirectional Poly phase energy meter 3 phase 4 wire. Accuracy class for active power measurement = 0.2Cl, CTR X/1A, PTR X/110V (open CT ratio and open PT ratio) compatible to SCADA with software.	Nos	22			
2	Programmable HT Electronic solid state bidirectional Poly phase energy meter 3 phase 4 wire. Accuracy class for active power measurement = 0.5Cl, CTR X/1A, PTR X/110V (open CT ratio and PT ratio) compatible to SCADA with software.	Nos	20			
3	Programmable HT Electronic solid state bidirectional poly phase energy meter 3 Phase, 4 wire. Accuracy class for active power measurement: 0.5Cl, CTR: X/5-1A, PTR: X/110V (open CT ratio and open PT ratio) compatible to SCADA with software.	Nos	15			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 120 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

SECTION V  
BID FORM AND PRICE SCHEDULES

<b>BHUTAN POWER CORPORATION LIMITED</b>						
<b>PROCUREMENT SERVICES DEPARTMENT</b>						
<b>THIMPHU: BHUTAN</b>						
Tender No.:	BPC/PSD-TU/EM/2010/08 dated 30 <sup>th</sup> April 2010					
LOT 1D (CT RINGS)						
<b>Sl. No.</b>	<b>Description</b>	<b>UoM</b>	<b>Qty</b>	<b>Country of Origin</b>	<b>Unit Price CIF/CIP Port of Entry (Exclusive of BST)</b>	<b>Total Price CIF/CIP Port of Entry</b>
1	200/5	Nos	30			
2	300/5	Nos	12			
3	400/5	Nos	18			
4	500/5	Nos	18			
5	Meter Grip Seal	Nos	20,066			
<b>Total Amount</b>						
Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.						
CIF: BPC Regional Stores Division, Phuentsholing Bhutan.						
Tender Delivery Period: 90 Days						
Offered Delivery Period: _____						
Currency for the Payment: Only in Nu.						
Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.						

SECTION V  
BID FORM AND PRICE SCHEDULES

<b>BHUTAN POWER CORPORATION LIMITED</b>						
<b>PROCUREMENT SERVICES DEPARTMENT</b>						
<b>THIMPHU: BHUTAN</b>						
Tender No.:	BPC/PSD-TU/EM/2010/08 dated 30 <sup>th</sup> April 2010					
<b>LOT 1E (CURRENT/POTENTIAL TRANSFORMERS)</b>						
Brands restricted to Actaris, Hexing, Holley, Elster, Iskra, Alstom, ABB, Landis+Gyr, New India Electricals & Perfect Sales						
Sl. No.	Description	UoM	Qty	Country of Origin	Unit Price CIF/CIP Port of Entry (Exclusive of BST)	Total Price CIF/CIP Port of Entry
1	CT/PT combined unit O/D type, pole mounting type, 3x(25-75)A/1A multi ratio CT including this current range), class 0.5, (15VA, PT ratio 11kV/110V suitable for both 3 phase 3 wire and 3 phase 4 wire HT metering configuration). It should be suitable for use with bidirectional static meter	Nos	8			
2	33 kV CT/PT unit O/D type, pole mounting type, CT ratio 75-50-25/1A (multi ratio CT including this current range), 3 core, 15VA, PT ratio: 33/0.110 kV, class 0.5 suitable for both 3 phase 3 wire and 3 phase 4 wire HT metering configuration. It should be suitable for use with bidirectional static meter (provide inputs to the meter in either direction of current flow).	Nos	1			
<b>Total Amount</b>						
<p>Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.</p> <p>CIF: BPC Regional Stores Division, Phuentsholing Bhutan.</p> <p>Tender Delivery Period: 90 Days</p> <p>Offered Delivery Period: _____</p> <p>Currency for the Payment: Only in Nu.</p> <p>Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.</p>						



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BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

**LOT 2A (POLE FITTINGS and ACCESSORIES)**

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (Exclusive of BST)	Total Price CIF/CIP Port of Entry
1	Stay Clamp Assembly (diameter 88.9 mm)	Set	1100			
2	Stay Clamp Assembly (diameter 114.3 mm)	Set	1300			
3	LBS/ABS Handle Support	Set	15			
4	33 kV cross arm assembly complete with M&U clamps, nuts, bolts and other accessories.	Set	60			
5	11 kV cross arm assembly complete with M&U clamps, nuts, bolts and other accessories.	Set	70			
6	33 kV cross brace arm assembly for H-frame with full clamps, nuts, bolts and other accessories.	Set	255			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 90 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

SECTION V  
BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

**LOT 2B (DISTRIBUTION BOXES and MINI PILLARS)**

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (Exclusive of BST)	Total Price CIF/CIP Port of Entry
1	Distribution Pillar 800A, 6 way	Nos	6			
2	Single phase LV Distribution Board 100 Amps. (bus rating) fitted with SPN 63A incomer MCCB and outgoing 2 way fitted with 2 nos. 50 Amps HRC fuse	Nos	2			
3	Marshalling box 6A with terminal connections	Nos	8			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 90 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

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BID FORM AND PRICE SCHEDULES

BHUTAN POWER CORPORATION LIMITED						
PROCUREMENT SERVICES DEPARTMENT						
THIMPHU: BHUTAN						
Tender No.:		BPC/PSD-TU/EM/2010/08 dated 30 <sup>th</sup> April 2010				
LOT 3 (ABC ACCESSORIES)						
Brands Restricted to Sicamex/ Tyco/ Dulmison / Niled / Ensto						
Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (exclusive of BST)	Total Price CIF/CIP Port of Entry
HV ABC Fittings						
1	Hook Bolt Assembly for HV ABC XLPE insulated Cable with route bolt of 16mm dia, 175 mm long	Set	20			
2	Hook Bracket Assembly for HV ABC XLPE insulated Cable with route bolt of 16mm dia, 175 mm long and also to be supplied with stainless strap and buckle, 114.3 dia. pole	Set	212			
3	Strain Clamp/ Dead End Clamp for 3 core, 95 sq. mm 11kV HV ABC Cable	Set	12			
4	Insulated Piercing Connector (IPC 95/95 sq. mm) for 11kV HV ABC Cable	Set	15			
5	Insulated Piercing Connector (IPC 95/95 sq. mm) for 33kV HV ABC Cable	Set	15			
LV ABC Fittings						
6	Set of Terminal Caps for 95 sq. mm	Nos	500			
7	Set of Terminal Caps for 120 sq. mm	Nos	100			
8	Strain Clamp/ Dead End Clamp for 4 core, 50 sq. mm LV ABC Cable	Set	350			
9	Strain Clamp/ Dead End Clamp for 4 core, 95 sq. mm LV ABC Cable	Set	450			

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BID FORM AND PRICE SCHEDULES

10	Insulated service T-Off connection 50 to 10 sq. mm	Nos	1200			
11	Insulated service T-off connection 95 to 25 sq. mm	Nos	400			
12	Insulated service T-off connection 95 to 10 sq. mm	Nos	1550			
13	Insulated Service T-off connection 95 to 6 sq. mm	Nos	200			
14	Insulation Tension Jointing Sleeves for 95 sq. mm	Nos	200			
15	Insulated Piercing Connector (IPC 95/95 sq. mm)	Nos	250			
16	Stainless Steel Strap 20x0.7 mm (50m per Roll)	Roll	364			
17	Stainless Steel Buckle for 20x0.7 mm strap	Set	2350			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 120 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

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BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

**LOT 4A (XLPE CABLES)**

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (exclusive of BST)	Total Price CIF/CIP Port of Entry
1	Aluminium conductor, semi conducting conductor shield, XLPE insulation, insulation shield of semicon compound in combination with copper tape, taped inner sheathed, galvanized steel flat strip armoured overall sheathed of PVC-ST2, confirming to IS-7098 (Part II) 1985 for 33 kV (E) grade					
	i 3 Core, 185 sq. mm	mtr	4500			
2	Aluminium conductor, semi conducting conductor shield, XLPE insulation, insulation shield of semicon compound in combination with copper tape, taped inner sheathed, galvanized steel flat strip armoured overall sheathed of PVC-ST2, confirming to IS-7098 (Part II) 1985 for 11 kV (E) grade					
	i 3 core, 300 sq. mm	mtr	2500			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 90 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

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BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

LOT 4B (PVC CABLES)

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (exclusive of BST)	Total Price CIF/CIP Port of Entry
1	PVC armoured power cable stranded (Type-A) shaped Aluminium conductor, PVC (Type-A) insulated colour coded cores laid up, inner sheathed or wrapped Thermoplastic tape, galvanized flat steel strip armoured and PVC (Type-STI) sheathed overall 1100 Volts conforming to IS: 1554.					
i	2 core, 16 sq. mm	mtr	500			
ii	4 core, 16 sq. mm	mtr	800			
iii	4 core, 25 sq. mm	mtr	1500			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 90 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

SECTION V  
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**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

**LOT 4C (XLPE/PVC JOINTING KITS)**

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (exclusive of BST)	Total Price CIF/CIP Port of Entry
1	XLPE Cable Termination Kit, push on type, 3 core, 70 sq. mm 11/6.35 kV grade (Indoor)	Set	4			
2	XLPE Cable Termination Kit, push on type, 3 core, 150 sq. mm 11/6.35 kV grade (Indoor)	Set	5			
3	XLPE Cable Termination Kit, push on type, 3 core, 185 sq. mm 33/19.05 kV grade (Indoor)	Set	1			
4	XLPE Cable Termination Kit, push on type, 3 core 300 sq. mm 11/6.35 kV grade (Indoor)	Set	33			
5	XLPE Cable Termination Kit, push on type, 3 core 70 sq. mm, 11/6.35 kV grade (outdoor)	Set	1			
6	XLPE Cable Termination Kit, push on type, 3 core 95 sq. mm, 11/6.35 kV grade (outdoor)	Set	30			
7	XLPE Cable Termination Kit, push on type, 3 core 150 sq. mm, 11/6.35 kV grade (outdoor)	Set	11			
8	XLPE Cable Termination Kit, push on type, 3 core 300 sq. mm, 11/6.35 kV grade (outdoor)	Set	27			
9	XLPE Cable Termination Kit, push on type, 3 core 185 sq. mm, 33/19.05 kV grade (outdoor)	Set	8			
10	11kV, 1 core 50 sq. mm straight through jointing kits (XLPE)	Set	10			
11	11kV, 3 core 300 sq. mm straight through jointing kits (XLPE)	Set	33			

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BID FORM AND PRICE SCHEDULES

12	33kV, 3 core 185 sq. mm straight through jointing kits (XLPE)	Set	25			
13	PVC Cable Jointing Kits 4 core, 25 sq. mm	Nos	30			
14	PVC Cable Jointing Kits 4 core, 150 sq. mm	Nos	14			
15	PVC Cable Jointing Kits 4 core, 240 sq. mm	Nos	26			
16	PVC Cable Jointing Kits 4 core, 300 sq. mm	Nos	18			
17	PVC Cable Jointing Kits 4 core, 400 sq. mm	Nos	49			
18	Termination Kit for 3 core, 95 sq. mm, Tee off connection from bare conductors to HV ABC cable 11/6.35 kV grade (outdoor)	Set	17			
<b>Total Amount</b>						
Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.						
CIF: BPC Regional Stores Division, Phuentsholing Bhutan.						
Tender Delivery Period: 90 Days						
Offered Delivery Period: _____						
Currency for the Payment: Only in Nu.						
Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.						



SECTION V  
BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

LOT 5 (RING MAIN UNIT)

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (Exclusive of BST)	Total Price CIF/CIP Port of Entry
1	11 kV RMU, 3 ways, SF6 Insulated, comprising of 1 Nos. VCB & 2 Nos. LBS, 630 Amps. Out-door Type, with complete accessories.	Set	1			
2	11 kV RMU, 4 ways, SF6 Insulated, comprising of 1 Nos. VCB & 3 Nos. LBS, 630 Amps. Out-door Type, with complete accessories	Set	3			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 120 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

SECTION V  
BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

LOT 6 (MCCB & HRC FUSE BASE)

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (Exclusive of BST)	Total Price CIF/CIP Port of Entry
1	MCCBs having breaking capacity of 35 kA along with the entire field fit to accessories conforming to IS: 13947-2-1993. MCCBs should be with static release. (MCCBs with thermal magnetic release will not be accepted)					
	i MCCB 100A TPN	Nos	30			
	ii MCCB 200A TPN	Nos	14			
2	MCCBs having breaking capacity of 50 kA along with the entire field fit to accessories conforming to IS: 13947-2-1993. MCCBs should be with static release. (MCCBs with thermal magnetic release will not be accepted)					
	i MCCB 400A, TPN	Nos	17			
3	HRC Fuse with base holder 200A	Set	48			
4	HRC Fuse with base holder 630A	Set	16			
5	HRC Fuse with base holder 800A	Set	8			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 90 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

SECTION V  
BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

LOT 7 (ELECTRICAL LINE MATERIALS)

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (Inclusive of BST)	Total Price CIF/CIP Port of Entry
1	M.S. Angle 75x75x6 mm	kg	500			
2	M.S. Angle 50x50x6 mm	kg	1800			
3	M.S. Channel 75x50x6 mm	kg	250			
4	M.S. Channel 100x50x6 mm	kg	200			
5	M.S. Flat 32x6 mm	kg	150			
6	M.S. Flat 50x6 mm	kg	300			
7	Stay wire	kg	5000			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 60 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: The rates should be inclusive of all taxes and duties both outside and inside the purchaser's country.

SECTION V  
BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

**LOT 8 (PORCELAIN INSULATOR)**

Preferred Brands – WSI, JSI, IEC and Jiangxi

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (Exclusive of BST)	Total Price CIF/CIP Port of Entry
1	11 kV pin insulator assembly with pin	Set	2340			
2	90 kN disc insulators anti-fog type for the 66 kV line with ball and socket size of 20 mm	Nos	2000			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 90 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

SECTION V  
BID FORM AND PRICE SCHEDULES

**BHUTAN POWER CORPORATION LIMITED**  
**PROCUREMENT SERVICES DEPARTMENT**  
**THIMPHU: BHUTAN**

Tender No.: BPC/PSD-TU/EM/2010/08 dated 30<sup>th</sup> April 2010

LOT 9 (33 kV ARCB)

Preferred Brands - Nulec

Sl. No.	Description	UoM	Quantity	Country of Origin	Unit Price CIF/CIP Port of Entry (Exclusive of BST)	Total Price CIF/CIP Port of Entry
1	ARCB 33kV with full accessories 630A	Set	2			
<b>Total Amount</b>						

Note: In case of discrepancy between the UNIT PRICE and the TOTAL PRICE PER UNIT, the UNIT PRICE shall prevail.

CIF: BPC Regional Stores Division, Phuentsholing Bhutan.

Tender Delivery Period: 120 Days

Offered Delivery Period: \_\_\_\_\_

Currency for the Payment: Only in Nu.

Taxes: BST shall be excluded from evaluation, but Excise Duty shall be inclusive in the quoted rates.

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**SECTION VI  
SAMPLE FORMS**

**SECTION VI  
SAMPLE FORMS**

**1. BID SECURITY FORM**

WHEREAS MESSRS \_\_\_\_\_  
(Hereinafter called "the Bidder") has submitted its bid dated \_\_\_\_\_  
for the supply of Electrical materials against Lot # \_\_\_\_\_  
(Insert Brief Description of the Goods) (Hereinafter called "the Bid").

KNOW ALL MEN by these present that WE \_\_\_\_\_  
of \_\_\_\_\_ having our registered office at \_\_\_\_\_  
\_\_\_\_\_ (hereinafter called "the Bank") are bound unto the (The General  
Manager, Procurement Services Department, Bhutan Power Corporation Limited, Thimphu:  
Bhutan) (hereinafter called the Purchaser) in the sum of  
Ngultrum \_\_\_\_\_  
\_\_\_\_\_) only, for which payment well and truly to be made to the said Purchaser,  
the Bank binds itself, its successor and assigns, by these presents. Sealed with the Common Seal  
of the Bank this \_\_\_\_\_ day of \_\_\_\_\_ 2010

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form; or
2. If the Bidder, having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity:
  - (a) fails or refuses to execute the Contract Form, when requested; or
  - (b) fails or refuses to furnish the Performance Security, in accordance with the instructions to Bidder;

We undertake to pay to the Purchaser up to the above amount, according to, and upon receipt of, its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both of the two above-stated conditions, specifying the occurred condition or conditions.

This guarantee will remain 1(one) year validity from the date of bid submission.

(NAME OF BANK)

By

(Title)

**SECTION VI**  
**SAMPLE FORMS**

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Authorized Representative

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(Signature of Witness)

Name of Witness

Address of Witness



**SECTION VI  
SAMPLE FORMS**

**2. CONTRACT FORM**

THIS CONTRACT made the \_\_\_\_\_ day of \_\_\_\_\_ 2010, between General Manager, Procurement Services Department, Thimphu of the Bhutan Power Corporation Limited (hereinafter "the Purchaser") of the one part and \_\_\_\_\_ (Name of supplier) of \_\_\_\_\_ (hereinafter "the Supplier") of the other part.

WHEREAS the Purchaser is desirous that certain goods be provided by the Supplier, viz., (Brief Description of Goods, as identified in the Bid Form and Price Schedule) (\*hereinafter "the Goods") and has accepted a Bid by the Supplier for the provision of those Goods in the sum of (Ngultrum \_\_\_\_\_) only (hereinafter "the Contract Price").

NOW THIS CONTRACT WITNESSETH AS FOLLOWS:

The Contract shall consist of this Contract Form: and the following documents, and the exhibits, drawings, specifications and other documents referred to therein (hereinafter the "Contract documents"), all of which by this reference are incorporated herein and made part hereof:

- (a) Notification of Award;
- (b) Price Schedules and Specifications;
- (c) Special Conditions of Contract;
- (d) General Conditions of Contract; and
- (e) The Bid Document

This Contract sets forth the entire contract and agreement between the parties pertaining to the supply of the Goods described herein and supersedes any and other earlier verbal or written agreements pertaining to the supply of the Goods.

This Contract shall prevail over all other Contract documents. In the event of any discrepancy or inconsistency within the Contract documents, then the documents shall prevail in the order listed above.

In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Goods and to remedy defects therein in conformity in all respects with the provisions of the Contract.

The Purchaser hereby covenants to pay the Supplier, in consideration of the provision of the Goods and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract, at the times and in the manner prescribed by the Contract.

Any notice under this Contract shall be in the form of letter, telex, cable or facsimile. Notices to either party shall be given at such address or addresses as such party shall specify from time to time by written notice to the other. In the absence of such notice to the contrary, notice to the

**SECTION VI**  
**SAMPLE FORMS**

[Purchaser's address and electronic transmission address]

\_\_\_\_\_

\_\_\_\_\_

A notice shall be effective when delivered or on the notice's effective date, whichever is later.

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be executed in accordance with their respective laws the day and year first above written.

\_\_\_\_\_  
Signature of Purchaser

\_\_\_\_\_  
Signature of Supplier

Signed, sealed and delivered by the said \_\_\_\_\_  
(For the Purchaser) in the presence of \_\_\_\_\_

Signed, sealed and delivered by the said \_\_\_\_\_  
(For the Supplier) in the presence of \_\_\_\_\_

**SECTION VI  
SAMPLE FORMS**

**3. PERFORMANCE SECURITY FORM**

To:  
The General Manager,  
Finance and Accounts Department,  
Bhutan Power Corporation Limited,  
Thimphu: Bhutan

WHEREAS \_\_\_\_\_ (Name of the supplier)  
hereinafter called "the Supplier", has undertaken to supply (description of goods) in pursuance of  
Contract No. \_\_\_\_\_ dated \_\_\_\_\_ 2010, hereinafter called "the Contract";

AND WHEREAS it has been stipulated by you in the Contract the Supplier shall furnish you  
with a Bank Guarantee by a recognized Bank for the sum specified therein as security for  
compliance with the Supplier's performance obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Supplier a Guarantee; THEREFORE WE hereby  
affirm that we are Guarantors and responsible to you, on behalf of the Supplier, upto a total of

\_\_\_\_\_  
(Amount of the guarantee in words and figures) and we undertake to pay you, upon your first  
written demand declaring the Supplier to be in default under the Contract, and without cavil or  
argument, any sum or sums as specified by you, within the limit of \_\_\_\_\_  
(amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons  
for your demand or the sum specified therein.

This guarantee is valid until \_\_\_\_\_ day of \_\_\_\_\_ 2010.

(NAME OF GUARANTOR)

By \_\_\_\_\_  
(Title)  
Authorized Representative

Date: \_\_\_\_\_  
Address: \_\_\_\_\_

**SECTION VI  
SAMPLE FORMS**

**4. POWER OF ATTORNEY FORM**

By this Power of attorney, created on...(date), (name of manufacturer/supplier/firm/dealer), having its legal domicile in (Place, Country), hereby nominates, constitutes and appoints as its true and lawful attorney.

(Name of Signatory Authority).

Who is given the authority to bind the firm by his signature in matters connected with or related to the company's activities in the supply and delivery of electrical materials for Power Lines and Substations for Bhutan power Corporation Limited

This Power of Attorney shall remain in force until... (Date)...

\_\_\_\_\_  
Signature of Signatory Authority  
Name:  
Designation:

\_\_\_\_\_  
Signature of Authorized  
Licensee of the firm.  
Name:

## SECTION VI SAMPLE FORMS

### 5. PRE CONTRACT INTEGRITY PACT

#### 1 General

Whereas the Pradeep M. Pradhan, General Manager representing the Procurement Services Department of Bhutan Power Corporation Limited, the Royal Government of Bhutan, hereinafter referred to as the Employer on part and the ..... as the other part hereby execute this agreement as follows.

**This agreement should be a part of the tender document, which shall be signed when the work(s) is awarded. Signing authorities will be the head of the client (agency) and the authorized representative of the bidder. If the winning bidder fails to sign the agreement, the work shall be cancelled.**

#### 2 Objectives

Now, therefore, the Employer and the bidder agree to enter into this pre-contract agreement, hereinafter referred to as Integrity Pact, to avoid all forms of corruption by following a system that is fair, transparent and free from any influence/unprejudiced dealings prior to , during and subsequent to the currency of the contract to be entered into with a view to:-

- 2.1 Enabling the Employer to obtain the desired works at a reasonable and competitive price in conformity with the defined specifications of the goods and services;
- 2.2 Enabling bidders to abstain from bribing or any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also refrain from bribing and other corrupt practices and the Employer will commit to prevent corruption, in any form by their officials by following transparent procedures.

#### 3 Commitments of the Employer:

The Employer commits itself to the following:-

- 3.1 The Employer undertakes that no official of the Employer, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favor or any material or immaterial benefit or any other advantage from the Bidder, either for themselves or for any person, organizing or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the Contract.
- 3.2 The Employer will, during the pre-contract stage, treat all Bidders alike, and will provide to all Bidders the same information and will not provide any such information to any particular Bidder which could afford an advantage to that

## SECTION VI SAMPLE FORMS

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particular Bidder in comparison to other Bidders.

3.3 All the officials of the Employer will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

3.4 In case of any such preceding misconduct on the part of such official(s) is reported by the Bidder to the Employer with full and verifiable facts and the same is prima facie found to be correct by the Employer, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the Employer and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the Employer the proceedings under the contract would be not be stalled.

### 4 **Commitments of Bidders**

The bidder commits himself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of his bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commits himself to the following:-

4.1 The Bidder will not offer, directly or through intermediaries, any bribe, gift, consideration, reward favor, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Employer, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.

4.2 The Bidder further undertakes that he has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favor, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Employer or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the Contract or any other contract with the Government for showing or forbearing to show favor or disfavor to any person in relation to the Contract or any other contract with the Government.

4.3 The Bidder will not collude with other parties interested in the contract to preclude the competitive bid price, impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.

4.4 The Bidder, either while presenting the bid or during pre-contract negotiations or

## SECTION VI SAMPLE FORMS

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before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the Employer of their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.

4.5 The Bidder commits to refrain from giving any complaint direct or through any other manner without supporting it with full and certifiable facts.

4.6 The Bidder shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.

### 5 **Previous Transgression**

**5.1** The Bidder declares that no previous transgression occurred in the last three years immediately, with any other Employer in respect of any corrupt practices envisaged hereunder that could be justify bidder's exclusion from the tender process.

**5.2** If the Bidder makes incorrect statement on this subject, Bidder can disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

### 6 **Sanctions**

**6.1** The provisions regarding Sanctions for violation of the Integrity Pact include forfeiture of Performance Bond in case the Employer decides to forfeit the same without assigning any reason for Imposing sanction for violation of Integrity Pact.

### 7 **Sanctions for violation**

Any breach of the aforesaid provisions by the Employer shall face administrative charges and penal actions as per the existing relevant rules and laws. The breach of the Pact by the Bidder or any one employed by him or acting on his behalf (whether with or without the knowledge of the Bidder) or the commission of any offence by the Bidder or any one employed by him or action on his behalf, shall be dealt with as per the provisions of the Bhutan Penal Code 2004, and the Anti-Corruption Act, 2006. The Employer/relevant agency shall also take all or any one of the following actions, whenever required:-

7.1 To immediately call off the pre-contact negotiations without assigning any reason or giving any compensation to the Bidder. However, the proceedings with the other Bidder(s) would continue.

7.2 The Earnest Money/Security Deposit/Performance bond shall stand forfeited.

7.3 To immediately cancel the contract, if already awarded/signed, without giving any compensation to the Bidder.

## SECTION VI SAMPLE FORMS

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7.4 To recover all sums already paid by the Employer.

7.5 To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the Bidder, in order to recover the payments, already made by the Employer, along with interest.

7.6 To cancel all or any other Contracts with the Bidder.

7.7 To debar the Bidder from entering into any bid from the government of Bhutan as per the Debarment clause of the Procurement Manual.

### 8 **Conflict of Interest**

8.1 A conflict of interest involves a conflict between the public duty and private interests (for favor or vengeance) of a public official, in which the public official has private interest which could improperly influence the performance of their official duties and responsibilities. Conflict of Interest would arise in a situation when any concerned members of both the parties are related either directly or indirectly, or has any association or had any confrontation. Thus, conflict of interest of any official or the Employer must be declared in the prescribed form attached.

8.2 The Bidder shall not lent to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the Employer, and if he does so, the Employer shall be entitled forthwith to rescind the Contract and all other contracts with the Bidder.

### 9 **Examination of Books of Accounts**

9.1 In case of any allegation of violation of any provisions of this Integrity Pact or payment of commission, the Employer or its agencies shall be entitled to examine the Books of Accounts of the Bidder and the Bidder shall provide necessary information of the relevant financial documents and shall extend all possible help for the purpose of such examination.

### 10 **Monitoring and Arbitration**

10.1 The Procurement Division of the Ministry of Finance be responsible for monitoring and arbitration of IP.

### 11 **Legal Actions**

11.1 The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.



**SECTION VI  
SAMPLE FORMS**

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**12     Validity**

12.1 The validity of this Integrity Pact shall be from the date of its signing and extend up to .....years or the complete execution of the contract to the satisfaction of both the Employer and the Bidder, whichever is later.

12.2 Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

The parties hereby sign this Integrity Pact at \_\_\_\_\_ on \_\_\_\_\_

**EMPLOYER**

**BIDDER**

**Witness:**

**Witness**

1.  
2.

(Legal Officer/LA)

1.  
2.